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ILLUSTRATED HAND-BOOK

AND

PRICE CURRENT OF MACHINERY AND IRON WORK.

WITH VARIOUS USEFUL TABLES OF REFERENCE,

COMPILED FOR THE USE OF

ENGINEERS, CONTRACTORS, BUILDERS, BRITISH & FOREIGN MERCHANTS, &c.

BY

APPLEBY BROTHERS,

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PREFACE.

NEARLY fourteen years ago, during his residence in the North of Europe, and often subsequently when at a distance from home, the writer of these lines has experienced the want of a Handy-book of Reference, with Engravings, Prices, Tables, &c., for estimating the values and weights of Machinery, and the cognate articles required by Merchants, Engineers, Contractors, and others in all parts of the world.

A large amount of information on these subjects will accumulate in the hands of any one who is called upon to execute a variety of work in different countries, and who will "make a note" of all that may appear to be noteworthy. The materials forming the following pages were originally collected solely for private use, and they certainly would not have been published in their present form but for the representation that a work of this character had long been wanted and inquired for.

This little work has been compiled in the leisure hours of business men, and has no pretension to being such a one as would have been produced from the same materials by an experienced "bookmaker." The principal object has been to present as much general information as possible in a compact form, and the authors will gladly avail themselves of any suggestion for the improvement of a future edition.

The Index has been made as copious as possible, so as to afford ready reference to any required subject; the prices quoted, together with the tables of weights, &c., will enable most persons to estimate with tolerable accuracy the actual cost to them of any article required, in this country or abroad, without reference to the manufacturer.

The quotation of prices is based upon the average market price of raw material, and any extraordinary fluctuation therein must affect the quotation for the finished article, but practically, the prices quoted will be correct in all but exceptional cases.

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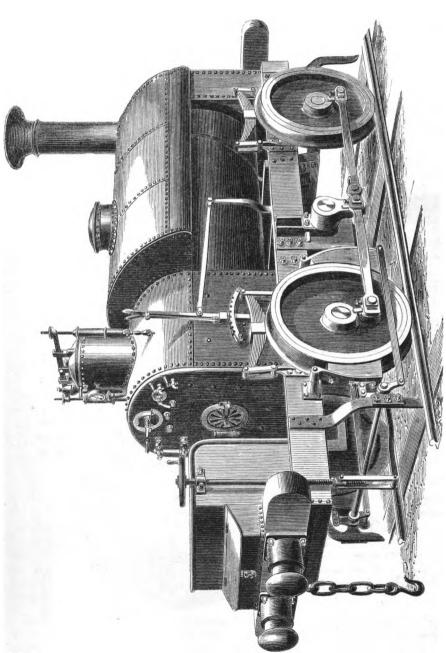
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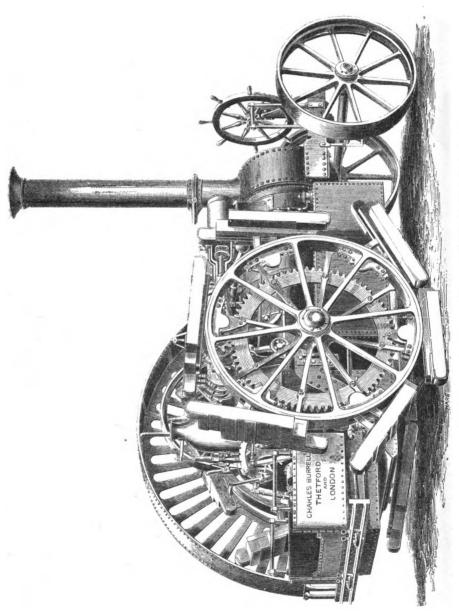
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SADDLE TANK LOCOMOTIVE FOR CONTRACTORS OR BRANCH LINES.



BOYDELL'S

TRACTION ENGINE AND PATENT ENDLESS RAILWAY.

This Invention is of national importance, as it removes the only difficulty hitherto experienced in making Steam Traction profitably available, both upon common roads and for agricultural purposes.

The working and the power of the Traction Engine and Endless Railway on common roads, have been fully and satisfactorily tested at Woolwich, before a Committee appointed by the Government, and also at other places, and the following important results obtained:—viz. that, on the best ordinary roads, the heaviest loads can be drawn with greater economy than by horse-power; and that, in ascending or descending the steepest hills, or in passing over soft and marshy ground, where no roads exist, this Engine and Railway have been found to overcome difficulties which no available amount of horse-power could possibly accomplish.

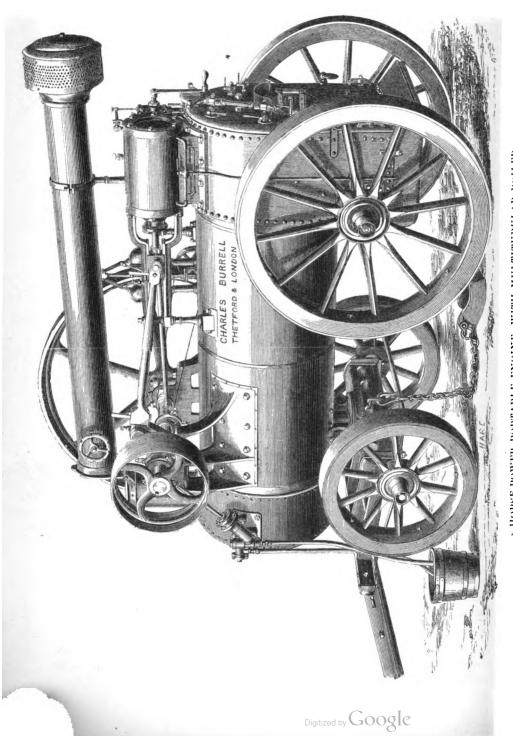
The Traction Engine, when fitted to the Endless Railway, possesses all the advantages of the Portable or Stationary Engine, with the great additional one that it can transport itself where required, without the aid of Horses, and draw with it Thrashing Machines, Corn Mills, Scutching Mills, Ploughs, or any other implements intended to be worked by it. Another very important feature of it is, that the Engine passing so smoothly over the Endless Railway, the machinery is liable to far less injury and wear-and-tear than a Portable Engine drawn on ordinary wheels.

As a Feeder to the Goods Traffic of Railways, by superseding the necessity of short and expensive Branch Lines, especially in thinly-populated districts, the advantages of "The Traction Engine and Endless Railway" can scarcely be overrated.

To the population of a country like England, intersected in every direction by Railways, and possessing, in addition, Canals and splendid Turnpike Roads, such a want of the means of locomotion can scarcely be appreciated; but it is believed, that in almost every other country in the world, the importance of this Invention, for the purpose of transporting produce and merchandise to their destined port or market, will be even greater than as a cultivator of the soil. Fortunately, it is equally adapted to the wants of almost every known country, whether it is destined to travel over the sandy deserts of our Eastern Possessions, over the muddy and almost impassable tracts of Australia, or over the snow-clad regions of North America, and the northern portions of the Continent of Europe.

These Engines are usually made to suit local peculiarities; and all applications for Prices, &c. should be accompanied by as much information as can be afforded as to the maximum weight to be drawn, the nature of the road or soil over which the Engine has to travel, the gradients of the road, and the distance between places where water can be obtained.





IMPROVED PORTABLE STEAM-ENGINE,

WITH

MULTITUBULAR BOILER.

This Engine is simple in construction, all the working parts being outside the Boiler: they are easy of access, and the Engines can be worked by any labourer of ordinary intelligence. The Boiler is constructed on the most improved locomotive principle; the Fire-box is made entirely of Lowmoor Iron, and is fitted with Tubes, so arranged as to obtain the maximum amount of heating surface in the least possible space, securing economy in the consumption of fuel, combined with lightness, compactness, and durability. In order still further to economise fuel, every Engine is fitted (without extra charge) with C. Burrell's improved apparatus for heating the feed-water before passing into the Boiler. The Boiler is covered with hair-felt, over which is placed a wood lagging; and this is again surrounded by sheet-iron plates. The whole is mounted on a strong carriage, fitted with locking-plate, wood wheels, and shafts.

PRICE: of Engines, with Fly-wheel, Governors, Steam-gauge, Hot and Cold Water Feed-pump, and all necessary Valves, Gauges, Cocks, &c. complete and ready for work.

			SINGL	E CYLI	NDER.		
Portable Steam Engines	4 н. р.	5 н. г.	6 н. р.	7 н. р.	8 н. р.	10 н.р.	12 н.Р
Diameter of Cylinders	61 in.	7 in.	7¾ in.	8½ in.	9 in.	10 in.	12 in.
Prices, including Waterproof Cover, Tube Brush, Stoking Irons, and Funnel	£165	£180	£200	£215	£230	£270	£303
Weight of Engine, without cases	ewt. 49	ewt. 52	ewt. 55	ewt. 58	ewt. 65	cwt. 72	ewt. 80
Measurement of Engine and Wheels, in cases	cubic feet 256	cubic feet 270	cubic feet 283	cubic feet 292	cubic feet 320	cubic feet 330	cubic fect 350
			Doub	LE CYLI	NDER.		
Portable Steam Engines	8 н	. Р.	10 н	р. 1	12 н. р.	14	н. Р.
Diameter of Cylinders	65	in.	7 in.		7¾ in.	8.	Į in.
Prices, including Waterproof Cover, Tube Brush, Stoking Irons, and Funnel	£2	50	£290)	£335	£	375
Weight of Engine, without cases	ev 7	rt.	cwt. 80		ewt. 90		ewt. 100
Measurement of Engine and Wheels, in cases		feet	cubic f		ubic fee 445		ic feet 460

1MPROVED FIXED STEAM-ENGINE,

COMPLETE,

WITH HORIZONTAL MULTITUBULAR BOILER AND FOUNDATION-PLATE.

This Engine is precisely similar in its Boiler and working parts to the Portable Engine last described; but in lieu of Travelling Wheels, a neat Base is fitted to the bottom of Fire-box which is used as an ashes-pan as well as foundation-plate for that end of Engine: the other end of Engine is supported on a cast-iron Cistern containing the feed-water, and rendering unnecessary any outlay for brickwork in fixing.

Dimensions, Weights, and Prices same as for "Portable" Engines (see page 5).

APPLEBY'S IMPROVED STEAM PUMPING ENGINE,

FOR WORKING AT A LOW PRESSURE.

This very compact Engine is specially designed to be worked by steam generated in the Boilers used for cooking purposes on board emigrants' or other vessels, or in private dwellings, (where more powerful boilers cannot be fixed), and is applicable for any light purpose, but especially for pumping the day's supply of water. It is calculated to work at 6lb. pressure per square inch, and may be made to lift, or force, a required quantity of water per hour.

One Horse-power Engine, price complete, with Shut-off Cock, and ready for fixing to a Wall or Ship's Boiler—£25: if with Double Action Pump, £5 extra. Larger sizes if required.

CORNISH or other PUMPING ENGINES.

LOCOMOTIVES for Passenger or Goods Traffic, or for Contractors (see page 1).

SECOND-HAND LOCOMOTIVES frequently on sale.

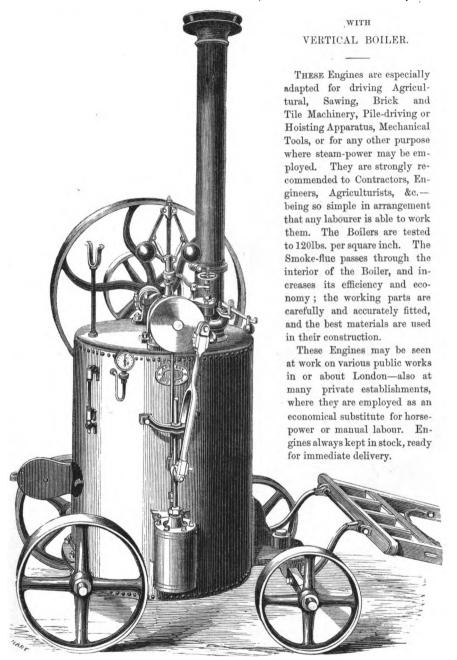
SECOND-HAND PORTABLE ENGINES for temporary purposes frequently on sale.

RIVER OF CANAL STEAMBOATS OF LIGHTERS, for Passenger or Goods Traffic.

WROUGHT IRON BARGES and PUNTS (any size) to order.

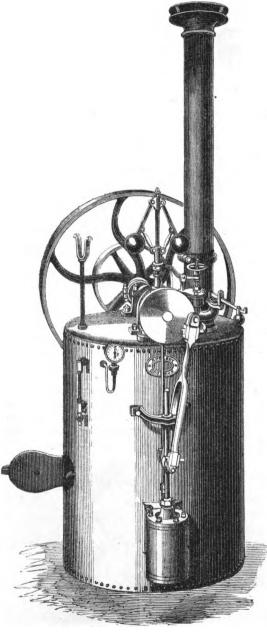


APPLEBY'S IMPROVED PORTABLE STEAM-ENGINE.



orse						iameter o Cylinder.						Price.						Αp	proximate Weight.	
																			28½ cwt.	
						61 in.						115								
6	•	•	٠	٠	٠	7¾ in.	٠	٠	•	•	•	165	0	٠	•	•	٠	•	55 —	

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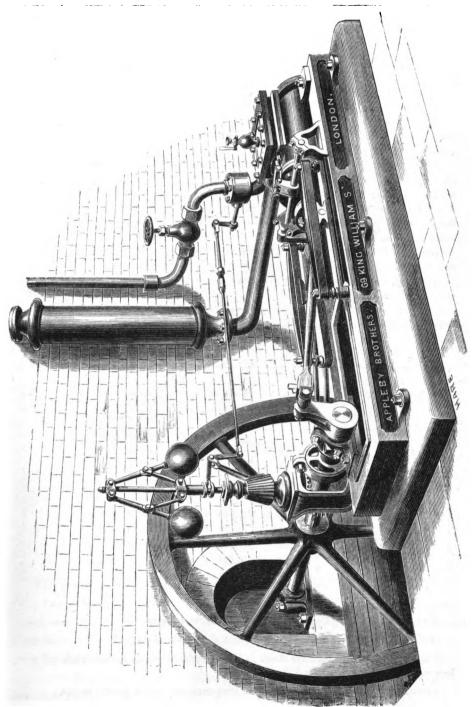


APPLEBY'S VERTICAL FIXED STEAM-ENGINE AND BOILER.

APPLEBY'S FIXED STEAM ENGINE is complete in itself, and is available for use out of doors, or in buildings where limited space only can be afforded. By placing the Boiler on a course of brickwork built on a stone slab, it may be worked with perfect safety on an upper floor. The general arrangement of this Engine is same as described for the Portable Engine.

If this Engine is made with an iron base forming a feedwater tank (and rendering it perfectly harmless on a wood floor), the prices are the same as for the Portable Engine.

Hor Pow			Diameter of Cylinder.			Price	٠.				A	pproximate Weight.
3			5 in.			£ 70	0					27 cwt.
4			6½ in.			110	0					37 —
6			7¾ in.	•		160	0		•	٠		52 —



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FIXED HORIZONTAL HIGH-PRESSURE STEAM-ENGINE,

WITH CYLINDRICAL CORNISH BOILER.

THE principle of this Engine is DIRECT ACTION, the working parts are easy of access, and are secured to a strong metal Foundation-plate, provided with bolts and nuts for fastening to stone, or brickwork, or wood-framing.

The Cylinder has turned flanges, bright polished cover, metallic piston with steel segment, brass tongues, and steel springs, piston-rod of best cast-steel, bright cross-head, cross-shaft with blocks lined with gun-metal, two sets of slide-bars planed and scraped, bright turned connecting-rod with gun-metal head, &c., polished gun-metal eccentric strap with bright rod fitted to valve motion, force-pump with gun-metal clacks and seatings, air vessel and covers, easily accessible, bright governors and lever. The steam is supplied from a Cylindrical Cornish Boiler, of ample size and strength, with one tube through the whole length, made of best materials and tested to a high pressure, patent steam-gauge, water-gauge and cock, safety-valve, blow-off cock, furnace-door, fire-bars, bearer and dead-plate, and every necessary for the safe, efficient, and economical working of the whole. The annexed prices include all complete to the end of fly-wheel shaft, but exclusive of pipes to connect Engine and Boiler (which will vary according to the distance apart):—

					PRI	CES.			
HORSE POWER.	DIAMETER OF CYLINDER.	LENGTH OF STROKE.	ENGINE	ON	LY.	ENGII BO COMI	ILER	_	APPROXIMATE WEIGHT.
	Inches.	Inches.	£.	8,	d.	£.	8.	d.	
4	6 ²	13	52	0	0	112	10	0	
6	8	20	76	0	0	145	0	0	
8	9	20	96	0	0	186	0	0	
10	11	24	120	0	0	220	0	0	
12	12	24	140	0	0	262	0	0	
14	14	24	170	0	0	305	0	0	
16	14	30	190	0	0	340	0	0	
20	16	30	220	0	0	420	0	0	
	<u> </u>								

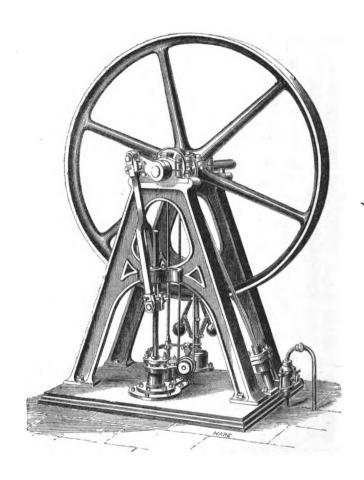
Link-motion Reversing Gear can be attached at an extra charge.

Horizontal Engines from 10 horse-power with 2 CYLINDERS, if required.

The improved Water Heater (as shown in the engraving) is highly recommended, and may be seen at work, price extra from £10.

SECOND-HAND Engines and Boilers, for temporary purposes, frequently on sale.





FIXED VERTICAL HIGH-PRESSURE STEAM-ENGINE, with cylindrical cornish boiler.

The general specification of this Engine is similar to the Horizontal Engine at page 10. The Vertical Standards, and all the working parts of the Engine, are fixed upon a strong metal base-plate, so that the whole may be easily erected upon a stout brick or timber foundation. The end of the fly-wheel shaft is usually (but not necessarily) carried in a wall-box. Engines of this construction are compact and steady when at work, and they occupy less space than Horizontal Engines of similar power. Prices &c. same as Horizontal Engines (see page 10).

APPLEBY'S PATENT STEAM PILE-DRIVING MACHINE.

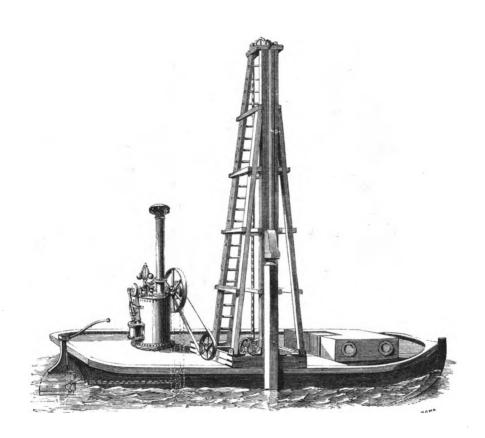


THE advantages claimed for these Machines are cheapness, compactness, and perfect stability when at work. The Engine and Boiler, of ample power and strength, are fixed upon the bottom framework, as shown in the engraving; so that the weight is brought upon the Machine itself, and the usual complication of separate Boiler, Steam Pipes, &c. with an attendant at a distance, is avoided. Boiler, upon which all the working parts of the Engine are fixed, is tested to a high pressure, is economical in the consumption of Fuel, and is adapted for burning Coal, Wood, Turf, &c. and by a simple arrangement priming is effectually prevented. The Engine is fitted complete with governors, steam-pressure-gauge, water-gauge, gauge-cocks, safety-valve, and all other necessary fittings. The fly-wheel is turned on the face so as to take a band, and a turned pulley is keyed on to the end of the fly-wheel shaft.

The general arrangement of the Pile Driver will be seen in the engraving; the Ram is lifted by means of horns, which are made to clutch the endless pitched chain revolving around pulleys at top and bottom of the upright framing, and is released by the self-acting lever striking against the pins fixed at any convenient height. The Ram, weighing 20 cwt., is speeded to make 10 strokes per minute.

The Machine may be set to drive piles at any angle with its base, up to 65 degrees, and the pile is pitched into its position for driving by simply attaching it by a rope or chain to the endless pitched chain; as the Ram will drive close down to the ground, no "Dolly" is required. The height of the Machine is 35 feet, and will drive a pile 30 feet long, or a greater or less height may be made to order. The Machine is mounted on plain or flanged wheels as required. The Engine may be easily removed, so as to be available for driving other Machinery when not required for Pile Driving.

Total weight of Steam Pile-driving— Machine, 4 Tons; Price complete, £180 delivered in London, Liverpool, or Hull.



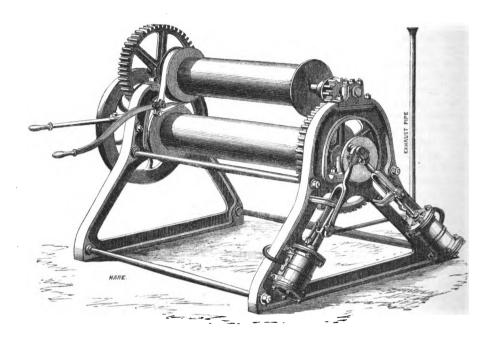
STEAM PILE-DRIVER ON BARGE.

This is precisely the same Engine and Machine as the foregoing, and is mounted on a Wrought-iron Barge, which is made self-propelling by a Screw which is driven by a strap from the pulley on main shaft of the Engine, as shown by dotted lines; price of the Barge, £

Steam Pile-driving Machines, with INDEPENDENT Boilers.

Hand Pile-driving Machines on the most approved construction.

Second-hand ditto frequently on sale.



STEAM CRAB OR WINCH,

for SHIPS DECKS, CONTRACTORS, SHIP BUILDERS, &c.

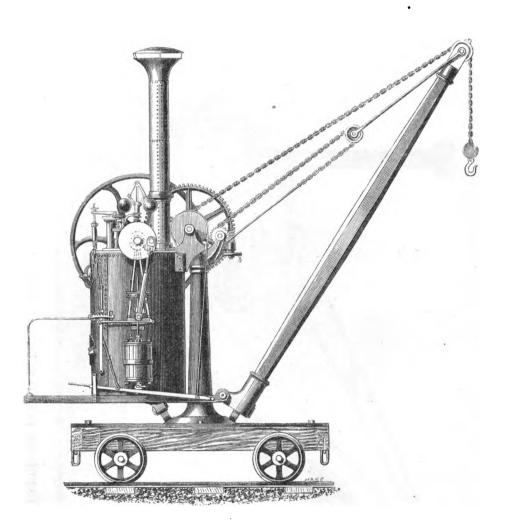
The above is fitted with a pair of cylinders, with single purchase motion, which will lift 10 cwt. at the rate of 80 feet per minute, and with double purchase, will lift 2 tons at 20 feet per minute,—powerful break gear for lowering, and all necessary clutches, levers, &c. as shown.

These winches are made of various sizes, and may be had with or without boilers.

APPLEBY'S (No. 1) IMPROVED PORTABLE STEAM CRANE, for RAILWAYS, CONTRACTORS, DOCKS, WHARVES, &c.

The Engine, Boiler, and all the working parts of the Crane are attached to a strong Iron frame, which revolves entirely around a central Pillar of hammered iron. This Pillar is fitted with a hardened Steel Toe working in a Steel Centre, and the Engine and Boiler act as a counterpoise to the load. The Cranes to lift 2½ tons and upwards are usually made to radiate by steam-power, and the smaller ones by hand. The Fixed Crane is provided with a metal base-plate and foundation-bolts of ample size and strength. The Portable Crane is mounted upon a strong Wrought-iron Carriage, with flanged or plain wheels as required. By a simple contrivance, the angle of the jib may be altered so as to set the load over a ship's hatchway or a railway cutting.





APPLEBY'S (No. 1) IMPROVED PORTABLE STEAM CRANE.

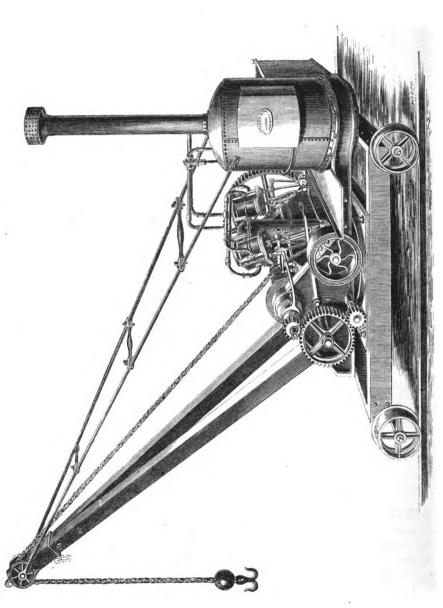
The Reversing Gear, Break, and Clutch Levers are under the immediate and easy control of one man.

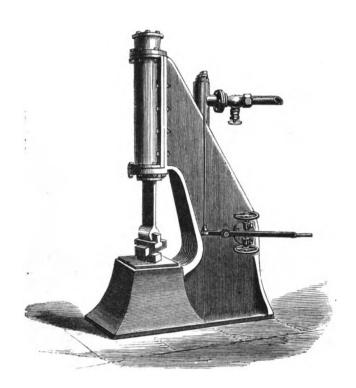
No. 1. Portable or Stationary Steam Crane, to lift 35 cwt. Price £185.

No. 2. Ditto ditto to radiate by Steam-power, to lift 50 cwt. , £230.

No. 2. Ditto ditto ditto ditto to lift 70 cwt. ,, £275.

Drawings and Estimates supplied for Cranes of greater or intermediate power, or to suit special circumstances.



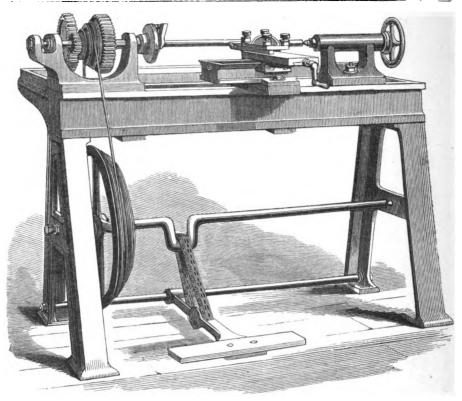


PATENT STEAM HAMMER.

In the construction of this Hammer the Patentee has combined, in the greatest degree, simplicity, thorough efficiency, and non-liability to derangement. The Piston-rod is of one solid piece of cast-steel, made square and working in bushes or slides of corresponding length, which render external bars unnecessary: these are arranged with ample provision for insertion of packing. By this means, a clear space is obtained for turning the forging about in any direction. The construction of the Valve is very simple and durable, and the action of the steam keeps it equally balanced, and enables the attendant to work the Hammer at any speed or force required. This is allowed to be the best and chrapest tool yet invented. It is portable, atrong, and substantial. Price, complete as drawing, £135; weight of piston, 3 cwt.; whole weight of Hammer about 5 tons.

CHILLED and GRAIN ROLLS of all dimensions for Rolling Steel, Iron, and other Metals. Rolling Mills and Forges of every description for Steam or Water Power.

INDIARUBBER ROLLS. PAPER ROLLS and CALENDERERS' ROLLS.



No. 3 BACKGEARED FOOT-LATHE.

HAND OR FOOT LATHES.

No. 1.

LATHE with iron bed, solid collar-head, rest and tee, centre-head, fly-wheel and pulley for strap, centre-chuck, drill-chuck, worm-chuck, fork-chuck, crank and treadle complete.

Height of								Price	.
Headstocks.			Feet.	Inches.			£.	8.	d.
3½ in centre			2	6 Iron Bed			6	0	0
. 4 ,,			3	θ,,			8	0	0
5,,			3	9,,			9	10	0
6,,			5	0,,			12	10	0

No. 2.

STRONG ENGINEER'S LATHE, with planed cast iron bed and standards, 2 face-plates, socket and T rest, top-speed pulley to match the one on fly-wheel, chucks, crank, treadle, &c. complete.

HEIGHT OF HEADSTOCKS AND	PRICE.	IF WITH COMPOU		EXTRA LENGTH OF IRON BED.
LENGTH OF BED.		81ZE.	PRICE.	PER FOOT.
6 in. centre, 4 ft. Iron Bed.	£. s. d. 13 13 0	10 × 6 in.	£ s. u. 7 5 0	£ s. d.
7 in. ,, 6 ,,	19 0 0	12 × 7 in.	8 8 0	1 4 0
8 in. ,, 6 ,,	22 10 0	15×8 in.	10 15 0	1 7 6

No. 3.

STRONG ENGINEER'S LATHE (as drawing) with DOUBLE-GEARED headstocks, planed east-iron bed and standards, 2 face-plates, socket and T rest;—overhead motion consisting of 2 hangers, cone pulley, and shaft, COMPOUND SLIDE REST, &c. complete.

HEIGHT OF HEADSTOCKS AND LENGTH OF BED.	PF	ICE.		BED, PER FOOT.
	£	8.	d.	£ s. d.
6 in. centre, 5 ft. Iron Bed.	29	0	0	1 1 0
7 in. ,, 6 ft. ,,	34	0	0	1 4 0
8 in. ,, 8 ft. ,,	43	0	0	1 7 6
10 in. ,, 10 ft. ,,	63	0	0	1 11 0

Bell chucks with 4 screws, internal 3 in. 4 in. 8 in. 6 in. diameter. £3. £3 12s. 6d. £4 5s. £5 10s. Ditto with 8 screws, £4 5s. £4 15s. £5 10s. £6 10s.

SLIDE LATHES FOR STEAM POWER.

No. 4.

With gun-metal steps, double-geared, with fixed and following stays; self-acting, longitudinal and transverse sliding motions; 36 speeds, driving apparatus, screw keys, &c.

LENGTH	OF BED.	LENGTH CENT			HT TO	P	RICE		EXTRA BED,		TH OF
ft.	in.	ft.	in.	ft.	in.	£	8.	d.	£	8.	d.
6	0	4	6	0	6	53	0	0	1	10	0
10	0	6	9	0	7	67	0	0	1	16	0
10	0	6	6	0	8	79	0	0	2	5	0
10	0	6	6	0	9	91	0	0	2	8	0
12	0	8	2	0	10	105	0	0	2	15	0
14	0	9	9	1	0	131	0	0	3	6	0
14	0	9	3	1	3	157	0	0	4	0	0

TREBLE-GEARED LATHES, with inverted gear on the edge of face-plate, with 36 speeds; in other respects as above.

LENGTH	OF BED.		BETWEEN FRES.		HT OF TRE.	P	RICE.	EXTRA BED,		OTH OF FOOT.
ft.	in	ft.	in.	ft.	in.	£	s. d.	£	8.	d.
18	0	11	6	1	6	230	0 0	4	5	0
18	0	10	9	1	9	262	0 0	4	15	0
18	0	10	0	2	0	291	0 0	5	8	0
20	0	11	3	2	6	330	0 0	6	0	0

No. 5.

SLIDE AND SCREW-CUTTING LATHES, with double-geared heads, conical mandril, and case-hardened steel bearings and collars, guide-screw the whole length for screw-cutting, 21 change wheels, 2 face-plates, 1 adjustable steady rest, following stay, compound slide-rest, self-acting on the longitudinal and transverse motions, driving apparatus, consisting of countershafts, 2 hangers, conical speed, and 2 sets of driving pulleys, strap-guide, and screw-keys.

1.EN		BREAD OF BE		1	TURN N GTH.	1	IGHT NO ITRE.	DIAMETER OF SCREW.	P	RICF		BED A	ND 8	OTH OF SCREW
ft.	in.	ft. ir	 1.	n	in.	ft.	in.	inches.	£	8.	d	£	8.	d.
6	0	1 0)	4	6	0	6	13	60	0	0	3	0	0
10	0	1 2	2	6	9	0	7	2	72	0	0	3	5	0
10	0	1 4	Į	6	6	0	8	21	90	0	0	3	12	0
12	0	1 8	3	8	2	0	10	2₺	120	0	0	4	4	0
14	0	2 0)	9	9	1	0	23	152	0	0	4	15	0
14	0	2 6	3	9	3	1	3	3	190	0	0	5	10	0

Any of the above Lathes may be made with fixed or sliding breaks, or with gaps in the bed, to admit larger diameters on the face-plate. Surface, wheel-turning, and every other description of Lathes made to order.

IMPROVED PLANING MACHINES,

Self-acting in the horizontal, vertical, and angular cuts, and may be had of any length in the bed, not exceeding 32 feet in one piece.

NO.	LENGTH OF BED.		PLANE IN WIDTH.	неіснт.	PRICE.	EXTRA LENGTH OF BED PER FOOT.
	ft. in.	ft. in.	ft. in.	ft. in.	£ s. d.	£ s. d.
1	4 6	3 0	2 0	1 3	90 0 0	5 7 6
2	6 0	4 0	2 0	1 6	107 0 0	600
3	8 0	5 0	2 0	2 0	130 0 0	6 12 6
4	10 0	7 0	2 6	2 6	180 0 0	7 5 0
5	12 0	8 0	3 0	3 0	215 0 0	8 8 0
6	12 0	8 0	4 6	4 0	310 0 0	9 15 0
7	16 0	10 0	5 6	5 0	370 0 0	10 15 0

SLOTTING AND SHAPING MACHINES,

Self-acting on the transverse and circular motions.

NO.	WILL TAKE IN DIAMETER.		LENGTH OF STROKE.		PRICE.			IF FITTED AS SIMPLE SLOTTING ENGINES.		
1 2 3 4 5	ft. 1 2 4 5	in. 6 0 0 0 0	ft. 0 0 1 1	in. 6 10 4 4 8	£ 89 113 163 215 310	0 0 0 0 0	d. 0 0 0 0	£	6.	d.

Drawings and all particulars on application.

Patent Nut-making Machines. Screwing Machines. Plate-bending Machines. Forging Machines. Improved Axle-bearing Boring Machines. Lathes for turning Railway Engine or Carriage Wheels on their Axles. Self-acting Surface Lathes.

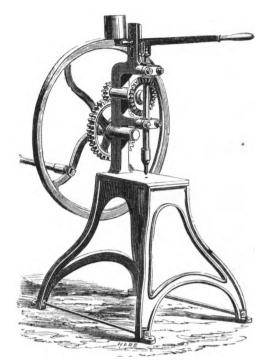


PORTABLE HAND-POWER DRILLING MACHINE,

COMPLETE WITH STAND.

Is extremely simple, strong, and easily driven by a boy; will drill holes up to 1½ inches diameter. The pressure is applied in front by a Lever, as shewn, and may be lifted instantly out of work.

Price £6 5s. 0d. Ditto, without Standards, to bolt to a Table or Work Bench, £5 5s. 0d. If with Bright Bed Plate extra, 17s. Boring Bar and Knife extra.

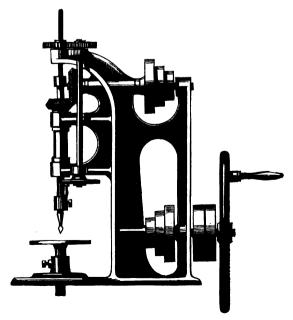


IMPROVED BENCH-DRILLING MACHINE,

FOR HAND OR STEAM POWER,

Fitted with Cone Speed Pulleys, Screw Feed, Fast and Loose Pulley, Fly-wheel for hand-power, and with moveable Table; will drill holes up to 1 inch diameter.

Price, £17.



STRONG SINGLE POWER DRILLING MACHINE,

Self-acting or hand-feed, with a range of 6 inches, table to rise and fall by a rack and pinion motion; will drill up to 1½ inch.

Price, £44.

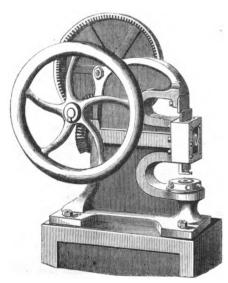
STRONG VERTICAL, GEARED, DRILLING AND BORING MACHINE.

Fifteen inches to centre, self-acting or hand feed, 6-inch range, table to rise and fall by a rack and pinion motion, Boring Bar, Driving Apparatus, and Screw Keys, &c.; will bore up to 6 inches diameter. Price £66.

Ditto, ditto, 18 inches to centre, 12-inch range, to bore up to 8 inches diameter, with Plane Table. Price £72.

Ditto, Strong Vertical, Geared, Drilling and Boring Machine, with Transverse Slide and Circular Motion. Price £83.

Pillar, Radial, and all other kinds and sizes of Drilling and Boring Machines made to order.

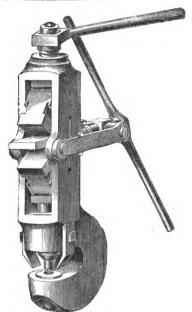


PUNCHING AND SHEARING MACHINE.

This compact and useful Tool is capable of Punching or Shearing 4-inch Plates; it is portable and adapted to be driven by hand or power, and provided with Steel Cutters, Punch and Guard, hardened and adjusted: the Worm Wheel and Pinion are made of wroughtiron, and all the working parts are carefully fitted and case-hardened ready for work. Price £17.

Ditto for \square.inch plates, price £25.

Larger sizes for Boilermakers, or for heavy work for steam-power, made to order.

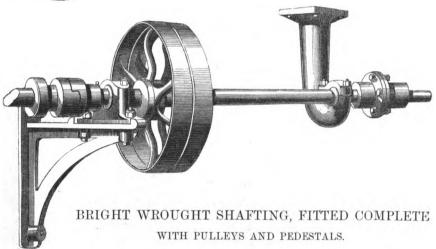


COOK'S PORTABLE HAND-PUNCH.

This instrument is intended for Punching holes in Plates, under circumstances where a fixed machine is inapplicable, or not accessible; and from its small size and portability (weighing only 50 lbs.) it will be found generally useful. Held in a vice, it has all the power of a fixed machine. It will make 10 holes whilst a Drill makes one, and is so simple that a boy may work it. It will be found invaluable for Shipbuilders, Boilermakers, Engineers, Smiths, &c.

Price of Machine to punch \(\frac{1}{4}\)-inch holes in plates \(\frac{3}{4}\)-inch thick, \(\mathcal{L}15\).

Ditto for plates §-inch thick, £18.

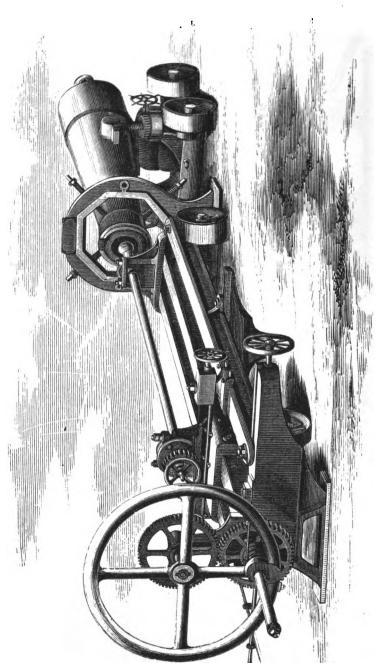


Bright Shafting with pulleys turned bright on the face, bored, fitted, and keyed, with pedestals, hangers, brackets or plummer-blocks, fitted with gun-metal bearings, complete, Per lb. 3½d.

Extra, if less than 2 in. diameter.

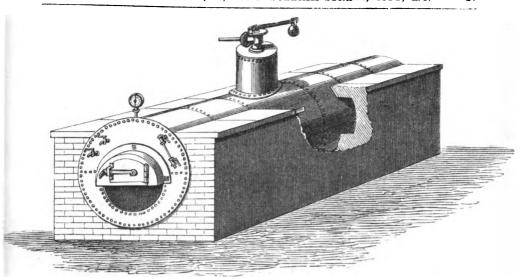
Plain Bright Shafting in lengths to order, with $\begin{pmatrix} 1\frac{1}{4} \text{ in. } 1\frac{3}{4} \text{ in. } 2 \text{ in. } 2\frac{1}{4} \text{ in. } 2\frac{1}{4} \text{ in. } 3 \text{ in. diameter.}$ plain solid couplings and steel pins or keys. $\begin{pmatrix} 2/10 & 3/4 & 3/9 & 4/3 & 5/1 & 8/ \text{ per foot.} \end{pmatrix}$

Plummer Blocks and Brasses. Brackets to support ditto. Hangers fitted with Brasses. Flanged Couplings. Clutch Boxes.
Loose Collars.
Fast and Loose Pullies,
all sizes.



VAVASSEUR'S PATENT TRANSPORTABLE MACHINE FOR RIFLING CANNON.

THIS Machine can be worked either by hand or steam power; will rifle guns of all sizes, with any twist, number, and shape of grooves; is fitted with wheels so as to be readily removed from one place to another; is adapted for rifling guns on board ship or in fortresses, without moving the gun its carriage, and is supplied with a carriage for rifling dismantled ordnance. Price and particulars on application.



WROUGHT-IRON CORNISH BOILERS, MADE OF BEST STAFFORDSHIRE PLATES.

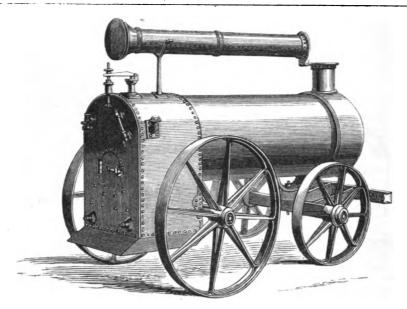
IF with fittings, the fittings will consist of of fire-door, grate-bars, bearers and dead-plate, stop-valve, safety-valve, feed-valve, blow-off-cock, and water-gauge.

HORSE POWER.	LENG	тн.	DIAM	ETER.		E OF		ETER DOME.	PR	ICE.		PRICE FITT		
	ft	in.	ft.	in.	ft.	in.	ft.	in.	£	8.	d.	£	8.	
6	10	0	3	6	1	10	1	8	36	0	0	55	0	0
8	12	0	4	0	2	0	2	0	48	0	0	69	0	0
10	14	0	4	3	2	3	2	0	60	0	0	83	0	0
12	15	0	4	9	2	6	2	0	. 71	0	0	97	0	0
16	19	0	5	0	2	9	2	0	95	0	0	124	0	0
20	22	0	5	3	3	0	2	3	119	0	0	150	0	0
25	25	0	6	0	3	0	2	в	157	0	0	188	0	0
30	3 0	0	6	0	3	0	2	9	194	0	0	225	0	0

EGG-ENDED BOILERS, OF BEST STAFFORDSHIRE PLATES.

HORSE POWER.	LENGTH.	DIAMETER.	PRICE.
4	ft. in. 11 0	ft. in. 3 0	£ s. d. 21 10 0
6	14 0	3 6	31 0 0
7	14 0	4 0	36 0 0
8	16 0	4 0	40 10 0
10	20 0	4 0	50 0 0
12	24 0	4 0	60 0 0
16	28 0	4 6	79 0 0
20	28 0	5 9	98 0 0

LOCOMOTIVE, MARINE, AND OTHER BOILERS TO DRAWING OR SPECIFICATION.



PORTABLE BOILER AND APPLEBY'S INDESTRUCTIBLE WROUGHT-IRON WHEELS,

PORTABLE MULTITUBULAR BOILERS,

						*B0	ILEF	e.			+в	OILER	s M	DUNT	ED.
Horse P	ow	er.				1	Price.					1	Price.		
4						£43	0	0				£66	10	0	
6						57	0	0				81	0	0	
7						62	10	0				87	0	0	
8						67	0	0				95	0	0	
10						83	0	0				116	0	0	
12				•		100	0	0				133	0	0	

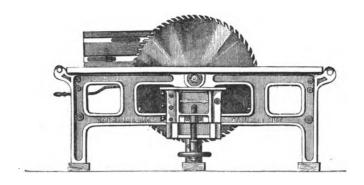
- * Includes fire-door, ashes-pan, man-hole, mud-holes and covers, stays, chimney, and smoke-box.
- + Includes ditto, ditto, and with wood or iron wheels, axles, locking-plate, fore-carriage, shafts, water-gauge, pet-cock, blow-off-cock, grate-bars, &c.

APPLEBY'S PATENT WROUGHT-IRON INDESTRUCTIBLE WHEELS,

Specially invented and adapted for hot or cold climates, combining the greatest amount of strength with lightness and durability.

3.0 dia	meter				per pair	£		Other sizes if required.
3.6	,,				,,	£		
4.0	,,				,,	£		
4.6	,,				,,	£	•	

These are admirably adapted for Gun Carriages.



CIRCULAR SAW TABLE.

THE Circular Saw is fixed in a planed metal Table, mounted on strong cast-iron framing, with saw-spindle, driving pulley, loose pulley, and parallel fence; and the larger sizes are fitted with Rollers at each end of the Table:—

Size of Table.	Saw.	£	s. d.
4.0×2 ft	24 in	. 10	8 10 0
5.0×2.2	30 in	. 2	2 10 0
6.0×3.0	30 in. and with Boring Apparatus	. 30	0 0 0
Ditto with Railwa	ay, Carriages, and Dogs complete.	. 4	5 0 0

Carriage Wheels for travelling, extra.

IMPROVED SELF-ACTING CIRCULAR SAW BENCH, WITH SILENT FEED-MOTION.

The Bench and Carriages with planed tops are fitted with holdfasts, turned iron rollers, fast and loose pulleys, guide-iron for strap; the end of Spindle bored out and a Screw fitted, so that it may be used for boring. Railway Bars 15 feet long, Draft Chains (to and fro), Wrenches, and other requisites included in the following prices:—

Table.		Saw.			To cut	£	8.	d.
4.0×3.0		36 in			15 inches deep	. 54	. 0	0
4.7×3.0		42 in			18 inches deep	. 60	0	0
4.7 × 3.0		42 in. (with r	everse moti	ion)	18 inches deep	. 66	0	0
5.6×3.0		48 in.	ditto		21 inches deep	. 78	0	0
6.0×3.0		54 in.	ditto		24 inches deep			
6.6×3.0		60 in.	ditto		27 inches deep	. 108	0	0
Boring App	paratus, v	vith Tools, from	1] in. to 1					
Travelling	Carriage	for carrying the	e Saw Benc	h.		. 12	0	0

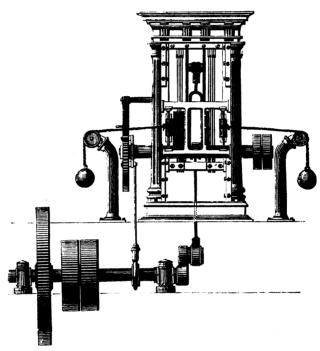
SLEEPER SAW BENCH.

This machine is intended expressly for splitting Sleepers for railways, and will work Saws up to 48 inches in diameter.

The timber is brought up to the Saw by means of dogs attached to the links of an endless chain, the feed being by this means continuous. This Bench will cut Sleepers as fast as the timber can be brought up and taken away.

The chain is carried in a planed cast-iron trough, which keeps it from rising or twisting; this trough is let into the wooden bench which is added at each end of the iron framing.

Average Power required, about 6 horse-power; Weight, about 31 tons. Price, £



IMPROVED DEAL FRAME,

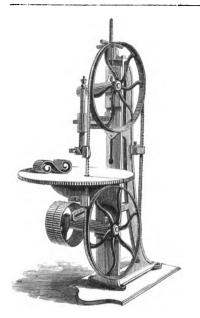
CONSTRUCTED to cut 2 Deals at one time up to 26 inches deep by 7 inches wide. The Deals are carried forward on rollers supported on stands; each stand with 3 rollers working independently—the centre rollers carrying the rack, and the outer ones the Deals. This machine is complete with side-rollers, dogs, balance-weight, and all the most recent improvements.

Average Power required, 6 horse-power; Rack, 28 feet long; Weight, about 5 tons. Price complete, including set of Saws and Buckles, \pounds

A smaller Frame, similar to the above, is made to cut 2 Deals at a time, 12 inches deep, 4 inches wide.

Average Power required, 4 horse-power; Rack, 24 feet; Weight, about 34 tons. Price complete, as above, £ .

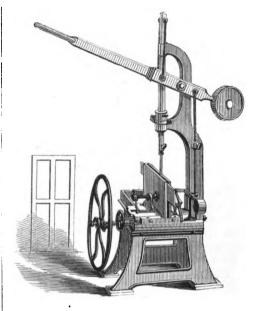
Timber Frames, Planking Frames, &c. all sizes.



IMPROVED ENDLESS BAND SAW MACHINE.

This Machine is adapted for every variety of work—circular, irregular, angular, or straight—and for any thickness up to 10 inches. The cut is continuous, and the Saw is fitted with the Patent Guard for the prevention of breakage. A swing-table is attached to the strong iron framing, and may be adjusted at any angle.

Complete, with 2 Saws, Price £38.



MORTICING MACHINE FOR HARD OR SOFT WOOD.

This Machine is very simple, powerful, and expeditious; it is self-feeding, and with it a labourer can do as much work as 8 skilled workmen by the old method.

Complete, with set of tools consisting of 8 mortice chisels, 1 core driver, 2 double spanners, &c.—Price £16.

THE IMPROVED GENERAL JOINER

Is adapted for Sawing, Grooving, Tongueing, Rabbiting, Tenoning, Moulding, Boring, Crosscutting, and Squaring up the sides and ends of drawers, boxes, or any other work, and is the most useful machine that can be introduced into a workshop.

The Table is made to take in saws up to 16 inches diameter, with fence adjustable to an angle of 45 degrees, or less if required. A small cutter-block to take moulding-irons is supplied with the machine for cutting beads, mouldings, &c.

The Saw-spindle is prepared for taking in augers up to 2 inches diameter.

Average Power required, about ½ horse-power; Weight, 12 cwt.; Speed of Saw, 1,600 revolutions per minute.

Price, £

ROLLER PLANING MACHINE,

For Planing, Grooving, Tongueing (edge and thickness at one operation) boards up to 12 inches wide by 4 inches thick, at the rate of 45 feet per minute. It is intended for soft wood only, and is especially adapted for floor-boards, &c.

Average Power required, about 5 horse-power; Weight, 5 tons.

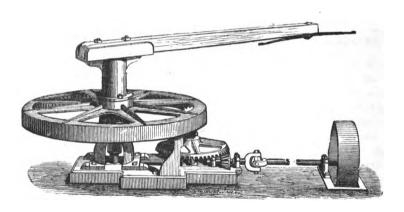
Price. £

IMPROVED MOULDING MACHINE.

Is adapted for cutting single Mouldings of any size or pattern, up to 6 inches wide by 4 inches thick. It is sometimes fitted with an under-cutter for planing the bottom side of the stuff, or for cutting double Mouldings, and also with a side-cutter for planing one edge.

Average Power required, 3 horse-power; Weight, 15 cwt.

Price, £



IMPROVED HORSE GEARS,

FOR GIVING MOTION TO PUMPING OR OTHER MACHINERY.

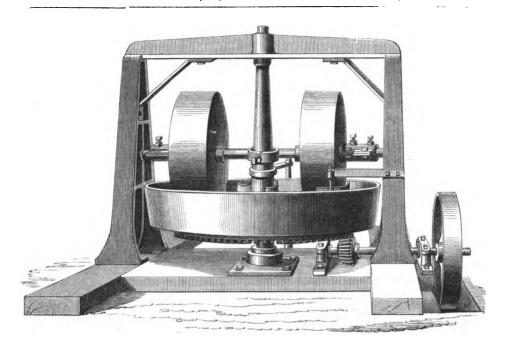
THESE Gears are strong, simple, and compact; the working parts rest on an extra strong iron frame, to which the first-motion and speed-motion Gearing are firmly bolted. A Pulley and frame are supplied with each machine.

No. 1.	One Horse Gear	with Pulley,	to work 180	revolution	is per minute	£12	10	0
2.	Ditto	ditto	270	ditto	ditto .	13	0	0

3. Ditto to work both 180 and 270 ditto ditto . . 13 15 0

Two, three, four, or six horse-power machines at proportionate prices. (See page 77.)





APPLEBY'S IMPROVED MORTAR AND LOAM MILL, FOR STEAM POWER.

This Mill may be confidently recommended for the use of Contractors and Builders, being thoroughly good and efficient in every respect, and may be readily fixed or removed. The pan is 7 feet diameter, the two rollers 3 feet 6 inches diameter, and 13 inches thick—giving a crushing weight of 65 cwt. Scrapers are fitted to the upright spindle, which revolves in a steel cup or toe: the whole is fitted with Spur Gear and Driving Pulley, complete and ready for work. The weight is about 8 Tons.

Price,

Mortar Mills of larger sizes and various patterns; prices on application.

PATENT HORIZONTAL BRICK MACHINE, FOR HAND POWER.

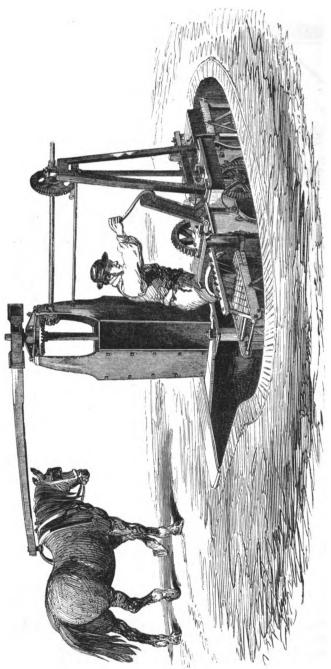
This Machine is made strong and substantial in every part, and will produce, when worked by a man and a boy, from 3,000 to 3,500 Bricks in a day of ten hours.

With 1 Brick Die, Stage, and Cutting-off Apparatus, price £20; or if with 1 Die for any sized Pipe, the same price.

Dies of all kinds and sizes for Draining Pipes, Bricks, Tiles, &c.

WASH MILL fittings any size to order.



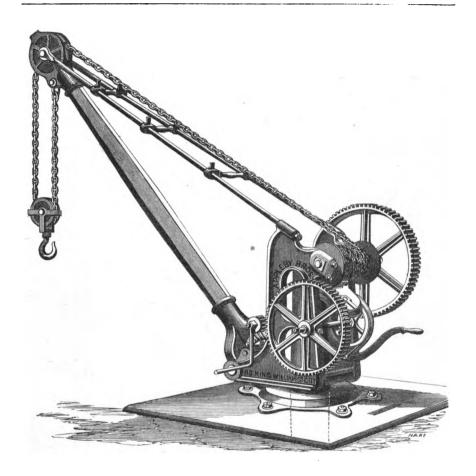


COMBINED CLAY-PREPARING, AND BRICK, PIPE, AND TILE MACHINE, ADAPTED FOR WORKING BY ANIMAL POWER.

THE usual production of this Machine, if worked by one horse, with one man feeding and four boys carrying away, is about 6,000 solid Bricks or 12,000 two-inch Pipes in ten hours. Price, with Pugging-Mill, double-end Brick and Pipe Machine, two self-lubricating Brick Dies, two stages connecting gear, horse-work, draw-bar, &c. complete—£70.

STRONG IRON FUG MILL (only,) as shown in the above Engraving, No. 1, 2 feet diameter No. 2, 2 feet 6 ,,

Brick, Pipe, and Tile Machinery of every description by the best Makers.



APPLEBY'S IMPROVED WHARF OR DOCK CRANE,

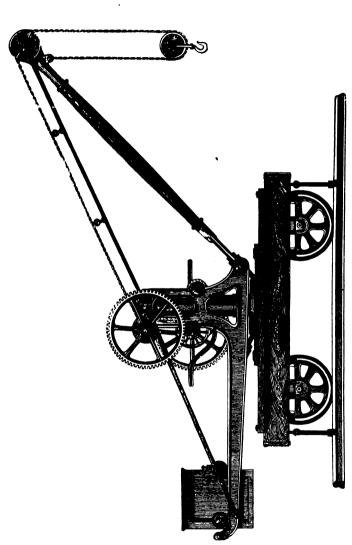
With strong Pillar to let into the foundation, and large Base-plate to bolt to masonry, with single and double purchase, powerful Strap-break; and the larger sizes are fitted with Radiating Motion (as shown above).

To lift 1 to	on .					. ±	: .
,, 2 to	ons .						
,, 3	,, .						
,, 5	,, .					•	
,, 10	,, .	•	•				
,, 15	,, .						
,, 2 0	,, .						

A great variety of Patterns. Drawings and Estimates on application.

Steam Cranes and Winches (see pages 13-16).





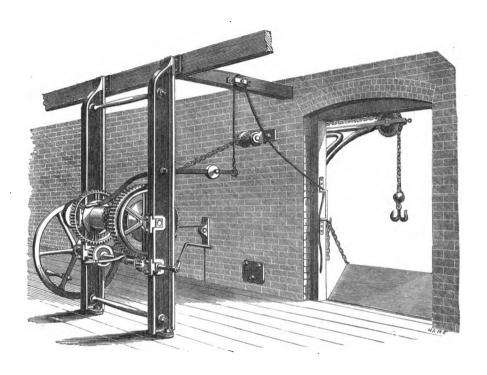
PORTABLE OR TRAVELLING CRANE FOR RAILWAYS OR ROADS.

THIS Crane is made very substantial, with Single or Double Gear, adjustable Balance-box, which may be regulated according to the weight to be raised: the frame of Travelling Carriage may be made of iron or wood; the wheels are cast-iron, with wrought-iron axles.

To lift 2 tons

To lift 5 tons

To lift 5 tons A great variety of Patterns of Portable Cranes,



IMPROVED HOISTING APPARATUS, FOR DOCK OR OTHER WAREHOUSES, BREWERIES, &c.

THE above engraving represents the most approved arrangement of Hoisting Tackle, specially adapted for warehouses where steam-power is not used. The Iron Framework, being bolted at top and bottom to the floors, is perfectly secure; the Crane-barrel is fitted with single purchase for light weights at quick speed, and with double-purchase motion for heavy loads at slower speed—each motion being under the immediate control of the man at the handle.

The Break Tackle may be applied either at the Crane barrel, or on any of the various floors.

The Crane is fitted with a self-acting apparatus for running the chain up after the load is taken off. This arrangement greatly increases the speed at which the work may be done, and lessens the labour in hoisting.

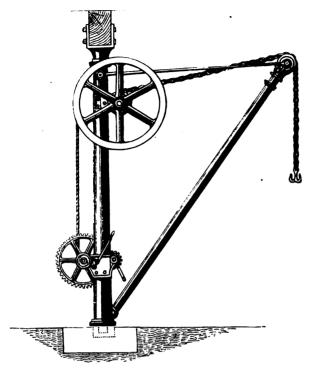
Warehouses or other Buildings, fitted complete with Hoisting Machinery of every description, by Steam, Hydraulic, Hand, or Horse Power.

Drawings and Estimates on application.

Jibs, Chains, &c. (see pages 37, 38).



APPLEBY'S IMPROVED PILLAR, OR WHIP-CRANE,



(TO LIFT FROM 3 CWT-TO 3 TONS),

May be made either in cast or wrought-iron or timber, and is especially adapted for warehouses or railway purposes, having 3 motions—quick, medium, and slow: one for hoisting quickly weights from 2 to 10 cwt.; slower for weights of 15 to 30 cwt.; and the slowest motion for heavy weights up to 3 tons. The speeds are easily changed, and the Crane is made to swing completely round.

The above will be found most efficient and inexpensive.

		(Cast	iro	n.									W	rou	ght	-iron	١.	
To lif	t 1	ton						£									£		
,,	2	,,		٠	•	•	•						•	•	•				
,,	3	,,	The	se	are	ma	ide	any	size	, and	to	su	it a	ny	sit	uat	ion.		•

OVERHEAD TRAVELLING CRANES FOR FOUNDRIES, ENGINEERS' SHOPS, &c.

With strong iron Cradle Ends for carrying the main Beams, which are of best Memel or Baltic Timber, and supported with strong wrought-iron Tension Rods and deep Fulcrum Stands of cast-iron. The gearing at each end is connected, so as to be worked from the centre of platform, which is securely railed round: the blocks, hooks, chains, &c. are all made of the very best material and thoroughly tested.

To lif	t 5	tons			ft. span	1	Crab		. £
,,	10	,,			,	1	••		
,,	20	,,			,,	2	,,		
,,	25	,,			,,	2	,,		
,,	3 0	,,			,,	2	,,		
,,	40	,,			,,	2	,,		

STRONG WROUGHT-

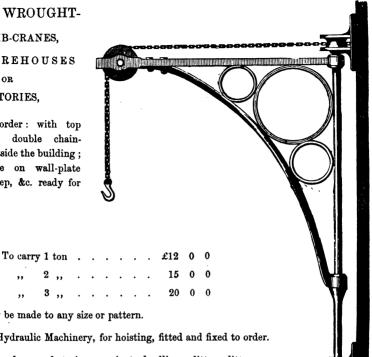
IRON JIB-CRANES.

FOR WAREHOUSES

OR.

FACTORIES.

Made to order: with top carriage and double chainpulley, for outside the building ; strong sheave on wall-plate inside; footstep, &c. ready for fixing.

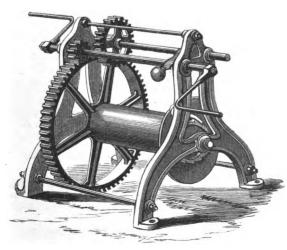


These may be made to any size or pattern.

Steam or Hydraulic Machinery, for hoisting, fitted and fixed to order.

Lifts for warehouses, factories, or private dwellings, ditto

Drawings and Estimates supplied on application.



DOUBLE-PURCHASE CRAB, WITH STRAP-BREAK.

IMPROVED DOUBLE-PURCHASE CRAB,

As drawing, very strong, with

To lift	4	tons	£ 7	0	0
,,	6	••	8	10	0
,,	10	,,	12	0	0
••		••	14	10	0

SINGLE-PURCHASE CRAB.

To lif	t 15 cwt.		£2	10	0
,,	1 ton		3	0	0
,,	11, ,,		3	10	0
,,	ž ,,		4	10	0
,,	4 ,,		6	0	0
	Brook 90	/n +	. 25	/n 🗛	tra

vith Break, 20/0 to 25/0 extra.



BEST SHORT LINK-CABLE

CRANE-CHAIN.

Price per cwt. . Government Proof Strain Price per yard for best proved Crane Chain 1/1 1/2 1/3 1/6 1/9 2/0 2/6 2/9 3/1 4/2 5/6 per vard. Stud Chain, 6d. per cwt. less. Larger sizes to order.



Price

12/0.

WESTON'S PATENT DIFFERENTIAL

PULLEY-BLOCKS.

THE great advantage of these Pulleys is, that while they are more powerful than ordinary Pulley Blocks, they also possess the invaluable quality of not "running down," under any circumstances, whilst the load is suspended to them.

Each set (if with ratchet lever) has two speeds: a fast one-by pulling the chain-for light lifts and for running the tackle up or down to any desired point; and another-by using the lever, which gives a lifting power equal to any ordinary Crab and Blocks combined.

A WEIGHT HUNG TO THE SINGLE BLOCK, IN EITHER LOOP, does not run back, EVEN IF THE CHAIN IS SUDDENLY LET GO, because the opposite sides of the loop pull against each other on opposite sides of the Double Sheave.

PRICE, without the Ratchet Lever, but so constructed that the weight specified can be

lifted by pulling at the chain :-3 tons. 4 tons. To lift . ₹ ton. 1 ton. 11 tons. 2 tons. 2 cwt. 5 cwt. 85/0 95/0 per set. 70/0 Price 37/6 50/0 60/026/030/0 per set. 85/0 115/0140/0 Price with Spocket Wheel 0/10 0/10 1/1 1/3 per foot. Bright Chain 0/4 0/5inch. Size of Chain 0/5per foot. Rope for Spocket Wheel .

Ratchet Levers, 12/6 each, extra.

In ordering, please specify height of lift, or state what chain is required. When worked from above, it takes chain twice the length of lift, and about 6 to 9 feet over, to allow for that round the sheaves. When worked from below, if the lift is more than 10 feet, a proportionate increase of chain is required.

RUBBISH WHEELS, WHIP GINS, Or MONKEY WHEELS, with Frames and Hooks complete. 18-inch, 16-inch. 14-inch, 16/0. 14/0.

BEST LONDON-MADE

PULLEY-BLOCKS,

With Pins turned, and Pulleys turned and bored.

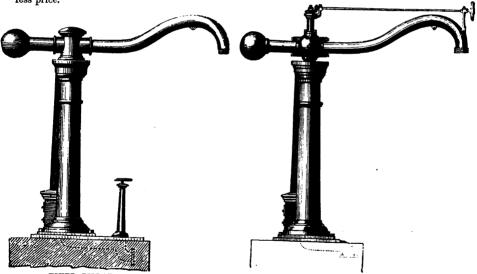






Diameter of Sheave.	Diameter of Chain.	Girth of Rope.			Pair aves.			Pair aves.			Pair aves.	Snate	ch B	
In.	In.	In.	Æ	8.	d.	£	8.	d.	£	8.	d.	£	5.	d.
3	1/4	21/2	1	11	6	2	8	0	3	5	0	1	4	0
4	5 16	3	2	2	0	3	0	0	3	17	6	1	16	0
5	3 8	3 ½	2	15	0	3	12	6	4	10	0	2	8	0
6	7	4	3	7	6	4	4	0	5	0	0	3	0	0
7	1 2	5	4	0	0	4	16	0	5	15	0	3	12	6
8	1. g	6	4	12	6	6	12	6	7	5	0	4	4	0

The above are the best quality made. A good common article may be had at 25 per cent. less price.



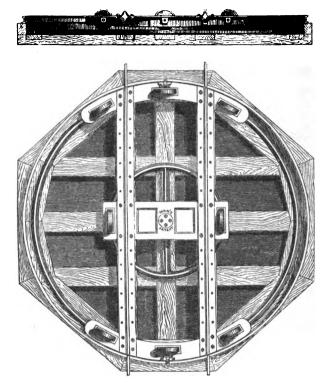
FIXED PILLAR.

REVOLVING SWAN NECK.

WATER PILLARS OR COLUMNS FOR SUPPLYING LOCOMOTIVES.

With Swan Neck, Height of Post. Dia	Fixed Pillar for Leather Hose.		Revolving Sv				
	meter. Bore. £ s. d. in. 6 in. 5,, 6,, 8,,	Height of Post. 10 feet 11 ,, 13 ,,	Diameter. 10 in. 14 ,, 18 ,,	Bore. 6 in. 6 ,, 8 ,,	£	.	d.

These Pillars may be made to suit all situations. Water Tanks for Railway Stations, &c. (see page 60). Engine Pumps, for supplying ditto (see pages 52—58). Steam-Engines of various kinds (see pages 1—11).



PATENT WROUGHT-IRON BEAM TURNTABLE,

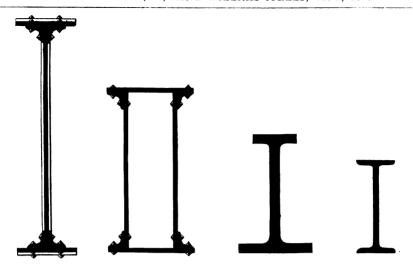
For turning Tank-Engines, or Engine and Tender separately, or for Main-road Stations.

DIAMETER.	GAUGE.	WITHOUT CURB.	WITH CURB.
ft. in.	ft. in.	£ s. d.	£ s. d.
12 0	4 84		
,,	5 6		
13 0	4 81 ₂		
,,	5 6		
15 0	4 81		
,,	5 6	1	
18 0	4 81	4	•
,,	5 6	1	
20 0	4 8ե		
,,	5 6		

The above can be made any size or gauge to order.

Patent Turntables for Engine and Tender, or for Sidings. Prices and Drawings on application.





Wrought-iron Rivetted Girders to Drawing or Specification. Rolled iron

ditto ditto ditto.

Cast-iron ditto ditto (see page 61.)

Contracts made for all kinds of Cast and Wrought-iron Work employed in Bridges,
Buildings, Roofs, Gas Works, Water Works, &c.

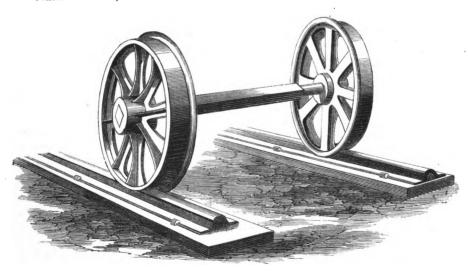
ditto ditto for Piers, Harbours, Caissons, &c.

ditto ditto for Lighthouses, Buoys, Beacons, &c.

Wrought-iron Fire-proof Doors. Shutters

Rails, Chairs, Points, &c. for permanent way.

Contractors' Rails, new and second-hand.



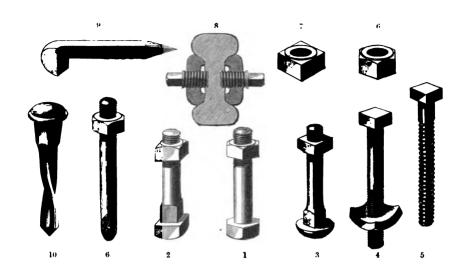
Railway Wheels and Axles of all kinds.

Contractors' ditto ditto (see page 61.)

Chilled cast-iron Tram Wheels for Contractors or Collieries, price £10 per ton, and upwards.

Pulley or Sheave patterns, for Flat or Round Rope, Chain, &c. in great variety.

Railway Waggon and Carriage Iron Work.



BOLTS AND NUTS SCREWED TO WHITWORTH'S STANDARD THREAD,

With Hexagon (1), Rose, Countersunk, or Square (2) Heads, and Hexagon or Square Nuts.

	LEN	GTH OF	BOLT		d de gro	r	groups	er	p	er oss.	pe cw	er	pe cv		pe cv		pe cv	er	1 d	er	1½ c	er	Pe cw	er	13 (er	Pe cw	er
Un t	0.11	inch .			8.	d. 2	s. 7	d. 9	s. 10		8.	d.	s. 26	d. 3	s. 25	d. 0		d. 0	8.	d.	8.	d.	8.	d.	s.	d.	8.	d.
	~	and up			7	3	9	0	11				25		24		22	9	22	9	22	9	22	9				
,,	3	**	4	,,	8	4	10	0	12	9			24	6	23	6	22	3	22	3	22	3	22	3	22	3	22	3
,,	4	,,	5	**	9	6	11	2			26	9	24	0	22	9	21	9	21	9	21	9	21	9	21	9	21	6
,,	5	,,	6	,,	10	6	12	3			26	3	23	6	22	3	21	3	21	3	21	3	21	3	21	3	21	
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,,	12	,,	14	,	æ.			-			24	0	20	6	19	6	18	6	18	6	18	6	18	6	18	6	18	(
,,	14	,,	16	,,							23	6	20	0	19	0	17	9	17	9	17	9	17	9	17	9.	17	
,,	16	**	18	,,							22	9	19	6	18	6	17	3	17	3	17	3	17	3	17	3	17	-

BOLTS with SQUARE NECKS 1s. 9d. per cwt. extra.

The Heads of Bolts are made out of the solid, not welded.

Coach and Set Screws of every description.

Washers and Burrs ditto ditto.

Machine-made Nurs, Hexagon (6) and Square (7), made and tapped to Whitworth's Standard Gauges and Thread.

	THICKNESS OF NUTS.														
Dimensions of Nuts	38	l g	<u>\$</u>	3 4	7 8	1	11	11	18	11	In				
Size of Hole	5 16	13	17 82	5	23	27 82	31 32	116	$1\frac{3}{16}$	1 3 2	,,				
Diameter across Flats .	11 16	7 8	15 16	11	11	111	15	2	$2\frac{3}{16}$	$2\frac{7}{16}$,,				
Diameter of Angle	3 4	1	11	11/2	13	2	21	2 <u>1</u>	23	3	١,,				
No. of threads to the in.	16	12	11	10	9	8	7	7	6	6					
No. of nuts to the cwt.	3584	1433	796	477	358	224	171	128	100	75					
		PER OSS.				PRICE	PER C	WT.							
Hexagon Nuts Untapped	2/3	3/4	28/6	27/3	26/0	25/6	25/6	25/6	25/6	25/6					
,, Tapped .	3/4	4/6	33/6	32/3	31/3	30/0	29/6	29/6	29/6	29/6					
Square Nuts Untapped.	1/8	2/6	22/3	22/3	21/0	20/0	20/0	20/0	20/0	20/0					
,, Tapped	2/9	3/8	27/3	27/3	13/0	24/6	24/0	24/0	24/0	24/0					

Nuts if made thicker or thinner will be extra.

Finished Nuts, Bright, at double the above prices.

Note—The thickness of Nut equals the diameter of Bolt.

Coach Screws in large quantities, special prices quoted.
Fish (3) and Fang (4) Bolts, ditto.
Railway Spikes and Dogs (9 and 10), various patterns, ditto.
Right and left hand Screws for Fish-plates (8), ditto.
Carriage and Waggon Bolts, in sets.
Set Pins.—Rivets, all kinds.
Wood Screws and Stove Screws, all kinds and sizes.

GALVANIZED IRON WIRE for FENCES, TELEGRAPHS, or SIGNALS.

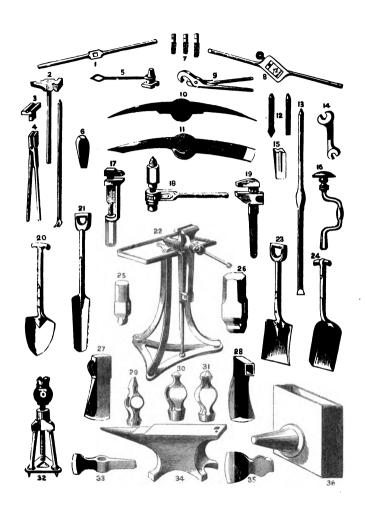
GALVANIZED STRAND OF ROPE WIRE for STRAINED WIRE FENCES OF SIGNALS.

MACHINE-MADE STAPLES for ditto.

STRAINING PILLARS and STANDARDS of all kinds.

PATENT CONTINUOUS IRON FENCING.

IRON HURDLES, GATES, &c.



ENGINEERS', CONTRACTORS', AND SMITHS' TOOLS AND WORKING PLANT.

No.	1.	Double-handled	Тар	Wre	nch.	(8	See	Scr	ew	Sto	ck	s ai	ıd	Die	8,	Nos	. 7 & 8	s.)
,,	2.	Ship-carpenters'	Pin	Mau	1.												5d. p	e r lb.
,,	3 & 5.	Smiths' Swage	Fools						٠.								$4 \frac{1}{6} d$.	,,
,,	4.	,, Tongs															4 ld.	,,
,,	6 & 15.	Iron Wedges															3 <i>d</i> .	,,

Nos. 7 & 8.	Best Black improved Screw Stocks, Dies and Taps for Engineers, &c. wit	h
	8 pairs of Dies and 6 fluted Taps, warranted. Or with 4 pairs of Dies and	d
	8 fluted Taps, warranted.	

	8 fluted Ta	aps, warran	ted.							
						Sizes.		4	Sizes.	
	To screw	inch dow	n		. £0	16	8	£1	. 1 (0
	,,	ŧ "			0	19	в	1	4 (0
	,,	1 ,,			1	8	0	1	. 9 (0
	,,	1 ,,			. 1	8 (в.,	1	14 (в
	,, 1	ı "			. 1	13	8	2	0 (0
	,, 1	l l ,,			1	16	0	2	3 (в
	,, 1	l } ,,			1	18 (o	2	8 (0
	,, 1	l <u>ł</u> "			2	10	6	8	3 (0
	,, 1	14 ,,			3	18	0	4	4 (0
	,, 2	2 ,,			. 4	16		5	12 (В
Screw Stock	s and Dies for	r Iron Gas I	ube. w	ith 3	pairs o	f Dies	and 6 Ta	ans, good	useful	l quality.
		and incl								6
		and 1	,,							0
		and }	,,					1	13 (в
		and 1	,,					1	18 (0
		and 1	,,					2	2 11 (0
		, and 14	,,					8	18 (0
	., ,	, and 2	,,					4	16 (0
		 Best Quali		ut 30	per ce	nt. mo	re.			
No. 9.	Pipe Tongs	-			-				41d. pe	ar th
10611	Picks and M									,,
″ 10	Cast-steel C	•								
77	Crowbars we	•	юц)							oer cwt.
,, 10. 14.						• •		• •	10/0 1	per cwt.
,, 14.	Double-ende					13	15	17	19	
	Length	41 51	7 5 3	9	11			-		inches.
	-	4 4 8 8	\$ 3 8 4	₹ 1″					21 21	inches.
	Price .	2/3 2/9	3/6	4/6	5/6	6/6	7/6	8/6	9/6	each.
	Length	21 23			27	29	31		36	inches.
	•	2 2 2 2 2 5				3§ 3§	8	•	5	inches.
		10/6 11/6	•		•	14/6	•	17/0 18	•	each.
	Double-ended					on, al	l sizes, 8	8d. per 1	١.	
No. 15.	Iron Wedges									
,, 16.	Best Wrough Ditto	ht-iron Brad ditto Se		_			ad, 7/6, 7/0	without ditto		8/8 each. 8/0
,, 17.	Coach Wren	_				. 10	•	4 16	18 inc	hes.
,, -:••								3 6/6 8		
,, 18.	Improved R					•	18 20	•	24 inc	
,,	Pri							32/0 3		
,, 19.	Improved M					-	/	,		
,,	Length	4 5 6			12 14	1 16	18	22 26	30	inches.
	Span .	1 1 1	11				1 21		4	,,
	-	KIO KIO CII	•						-	

Price . 5/0 5/6 6/0 7/0 8/6 10/0 11/6 13/0 14/6 18/0 22/0 26/0 each.

SHOVELS FOR CONTRACTORS, RAILWAY, AND GENERAL PURPOSES.

		No. 0 1 2 3 4 5	
No.	20.	Round Shovels with Crutch Handles . 28/0 29/0 31/0 32/0 34/0 per dozen.	
,,	23.	Square Shovels with Box Handles 23/0 24/0 26/0 28/0 29/0 31/0 ,,	
,,	24.	Stokers' Shovels, strapped over Crutch 39/0 41/0 44/0 ,,	
,,	21.	Draining Tools, Box Handle 41/0 42/0 44/0 ,,	
		Casting Tools, Crutch Handle 29/0 31/0 32/0 ,,	
		Grafting ditto ditto 29/0 31/0 32/0 ,,	
,,	22.	Portable Work Bench with Vice, complete, No. 1. 21 × 14 inch. 35/0.	
		Ditto ditto No. 2. 26×18 ,, $47/6$.	
		Best bright cotter Key Vices 4d. per lb.	
		Best Hand Vices $\begin{cases} 4 & 4\frac{1}{2} & 5 & 5\frac{1}{2} & 6 \text{ inches} \\ 2/9 & 3/3 & 4/0 & 5/0 & 6/0 \text{ each.} \end{cases}$	
No.	25, 26,	29, 30, 31. Hammers for Engineers, Mechanics, Smiths, &c. at 44d. per th.	
,,	27 & 35	•	
,,	33.	Ditto for Stone Masons	
,,	28.	Adzes for Carpenters, &c. all kinds.	
,,	32.	Lifting Jacks, Tripod Shape, or Cotton Screw:—	
		To lift $\frac{4}{3}$ 6 10 tons. Price $\frac{3}{0}$ /0 $\frac{3}{12}$ /6 $\frac{5}{15}$ /0	
		Bottle Shape, same price.	
		Haley's Lifting Jacks, to lift 4 6 8 12 16 tons. 5/7/6 6/3/0 7/10/0 9/15/0 13/0/0	
		Traversing Screw Jacks with double Ratchet Lever to Main Screw—	
		To lift $\begin{array}{cccccccccccccccccccccccccccccccccccc$	
,,	34	Anvils, best, 28/0 per cwt. ditto, warranted, 32/8 per cwt.	
,,	36	Tuyere Iron and Cistern—	
		No. 1. with 21 inch Cistern and 12 inch Tuyere 40/0	
		No. 2. ,, 24 ,, ,, 18 ,, ,, 50/0	
		Smiths' Bellows, warranted—	
		24 26 28 30 32 34 36 38 40 42 inches. 54/0 65/0 76/0 92/0 110/0 137/0 176/0 220/0 276/0 300/0 each.	
	P	atent Circular Double-action Bellows, Iron Frames—	
		18 20 22 24 26 28 30 inches diameter. 5/15/0 6/12/0 7/14/0 8/16/0 9/18/0 11/10/0 13/8/0 each.	
	Qua	arry Mauls @ 4½ per ib.	
	_	th Rammers 3/6 each.	
		atractors' Carts, Waggons, and Barrows.	

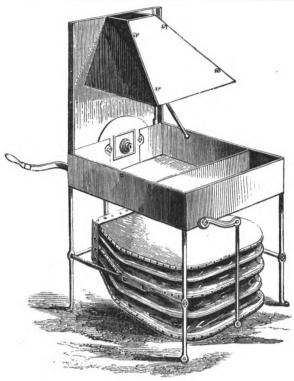
Trollies for Platelayers.
Wheelbarrow-wheels, Wrought Iron.

Ditto ditto Cast Iron.

Jim Crows, or Permanent Way Cramps for lifting or straightening Rails @ 6d. per ib. Contractors' Locomotives (see page 1).

Smiths' Work and Forgings (see Forgings, pages 49 and 50).

Bolts and Nuts. Bolt Ends (see pages 42 and 43).



PORTABLE FORGE,

ALL OF

WROUGHT-IRON,

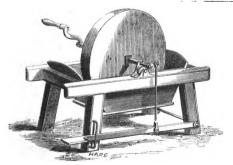
WITH BEST

TOWN-MADE BELLOWS,

COMPLETE.

PORTABLE FORGE WITH HOOD.

No. 1.	No. 2.	No. 3.	No. 4.
18×24 .	21×27 .	$.$ $.$ 24×33	27×35 inches.
)			
£3 7s. 6d	. £3 17s. 6d.	£5 10s	£6 5s.
these will pac	k into a square	the size of the par	n of Forge.
1	20.0		-
£2 10s	. £3 3s	£4 58	£5 10s.
	$\begin{cases} £3 \ 7s. \ 6d. \end{cases}$ these will pace	$\begin{cases} £3 \ 7s. \ 6d. \\ \therefore \text{ these will pack into a square} \end{cases}$	No. 1. No. 2. No. 3. 18×24 . 21×27 24×33 } £3 7s. 6d £3 17s. 6d £5 10s. these will pack into a square the size of the part $21 \times 21 $



GRINDSTONE

WITH

HANDLE AND FOOT TREADLE,

And the Spindle mounted on a friction roller,

Price £2 10s, and £3 each.

Cast-iron Grindstone Trough, with Shaft, Pedestals, 2 ft. 0 in. 2 ft. 6 in. 3 ft. 0 in. 4 ft. and Pulley, and will admit a stone £3 7s. 6d. £4 15s. £6 15s. £10 Newcastle Grindstones (see page 88.)

MINING TOOLS AND MACHINERY.

CORNISH PUMPING AND WINDING ENGINES, FOR MINES, WATER WORKS, OR ANY OTHER PURPOSE.

ALL KINDS OF DRAINING AND PUMPING GEAR.

WINDING CAGES AND MACHINERY.

MILL GEARING OF ALL KINDS.

WATER WHEELS AND TURBINES OF ALL KINDS.

STAMPERS AND MACHINERY OF THE MOST APPROVED KINDS, FOR CRUSHING QUARTZ, LEAD, SILVER, TIN, OR COPPER ORES.

SEPARATORS AND AMALGAMATORS FOR DITTO.

CAPSTANS FOR MINES. &c.

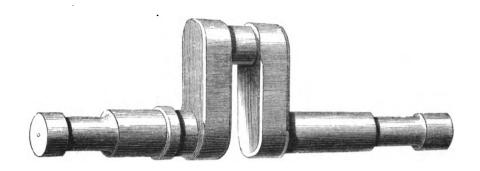
COLLIERY OR TRAM WHEELS, AXLES, AND PEDESTALS. (See page 41.) PULLEYS AND SHEAVES. (See page 41.)

MINERS' TOOLS, SHOVELS, PICKS, WEDGES, HAMMERS OF VARIOUS KINDS, BORING TOOLS, CROWBARS, &c.

RIVETTED WROUGHT-IRON WHIM KIBBLES AND BUCKETS, ALL SIZES.

CASTINGS AND WROUGHT-IRONWORK OF EVERY DESCRIPTION FOR MINING PURPOSES.





FORGINGS FOR ENGINEERS, SHIPBUILDERS, AND CONTRACTORS. ALL MADE FROM BEST-SELECTED SCRAP-IRON.

Shafting to dimensions, under 10 cwt. """, above 10 and under 20 cwt. """, above 20 and under 30 cwt. """, above 30 and under 50 cwt. """, above 50 and under 60 cwt. """, above 60 cwt. subject to special quotation If with solid flange couplings, per cwt. extra Locomotive Axles, swaged Piston Rods, do. Hydraulic Press Pillars Marine Engine Pillars Other Plain Forgings Single-cranked Axles, under 3 cwt. """, above 3 and under 10 cwt. """, above 10 and under 20 cwt. """, above 20 cwt. subject to special quotation. Double-cranked Axles, under 4 cwt. """, above 4 and under 10 cwt. """, above 10 cwt. subject to special quotation. Stationary and Marine Engine Cranks, under 10 cwt. """, above 10 cwt. subject to special quotation. Stationary and Marine Engine Cranks, under 10 cwt. """, above 10 cwt. subject to special quotation. Cross Heads, subject to special quotation, according to drawing. Connecting Rods, ditto ditto ditto Levers, &c., ditto ditto ditto Paddlewheel Shafts, ditto ditto ditto Serew and Intermediate Shafts ditto ditto Wrought Wheels ditto ditto ditto Wrought Wheels ditto ditto ditto Wrought Wheels, ditto ditto ditto Patent Axles, for Carts or Drays. Cart Arms. Waggon Axles, under 1½ cwt. Ditto above 1½ cwt. Agricultural Forgings of every description.	Description.	From Forge. per cwt.	Rough Turned, per cwt.	Finished Complete per cwt.
,,,, above 20 and under 20 cwt. ,,,, above 30 and under 30 cwt. ,,,,, above 40 and under 50 cwt. ,,,,, above 50 and under 60 cwt. ,,,, above 60 cwt. subject to special quotation If with solid flange couplings, per cwt. extra Locomotive Axles, swaged Piston Rods, do. Hydraulic Press Pillars Marine Engine Pillars Other Plain Forgings Same list as Shafting Marine Engine Pillars Other Plain Forgings Single-cranked Axles, under 3 cwt. ,,,,, above 10 and under 20 cwt. ,,,,, above 10 and under 20 cwt. ,,,,,, above 20 cwt. subject to special quotation. Double-cranked Axles, under 4 cwt. ,,,,,, above 4 and under 10 cwt. ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Shafting to dimensions, under 10 cwt			
above 20 and under 30 cwt. above 40 and under 40 cwt. above 50 and under 60 cwt. Some list as Shafting Barine Engine Pillars Other Plain Forgings Single-cranked Axles, under 3 cwt. above 3 and under 10 cwt. above 20 cwt. subject to special quotation. Double-cranked Axles, under 4 cwt. above 20 cwt. subject to special quotation. Double-cranked Axles, under 4 cwt. above 10 cwt. subject to special quotation. Stationary and Marine Engine Cranks, under 10 cwt. above 10 cwt. subject to special quotation. Stationary and Marine Engine Cranks, under 10 cwt. above 10 cwt. subject to special quotation. Cross Heads, subject to special quotation, according to drawing connecting Rods, ditto dit	shows 10 and under 90 aut			1
above 30 and under 40 cwt. above 40 and under 50 cwt. above 50 and under 60 cwt. above 60 cwt. subject to special quotation If with solid flange couplings, per cwt. extra Locomotive Axles, swaged Piston Rods, do. Hydraulic Press Pillars Marine Engine Pillars Other Plain Forgings Single-cranked Axles, under 3 cwt. ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	above 20 and under 20 aut	• *		
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Piston Rods, do. Hydraulic Press Pillars Marine Engine Pillars Other Plain Forgings Single-cranked Axles, under 3 cwt. "", above 3 and under 10 cwt. "", above 10 and under 20 cwt. "", above 20 cwt. subject to special quotation. Double-cranked Axles, under 4 cwt. "", above 4 and under 10 cwt. "", above 10 cwt. subject to special quotation. Stationary and Marine Engine Cranks, under 10 cwt. "", above 10 cwt. subject to special quotation. Cross Heads, subject to special quotation, according to drawing. Connecting Rods, ditto ditto ditto Levers, &c., ditto ditto ditto Paddlewheel Shafts, ditto ditto ditto Screw and Intermediate Shafts ditto ditto Wrought Wheels ditto ditto ditto Wrought Wheels ditto ditto ditto Boss Uses Uses of every description, to sketch or pattern. Patent Axles, for Carts or Drays. Cart Arms "" But as Shafting Same list as Shafting Same list as Shafting Same list as Shafting "" "" "" "" "" "" "" "" ""	11 with botto number comprisings, per ever exercise	• .		1
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Marine Engine Pillars Other Plain Forgings Single-cranked Axles, under 3 cwt. "" above 3 and under 10 cwt. "" above 10 and under 20 cwt. "" above 20 cwt. subject to special quotation. Double-cranked Axles, under 4 cwt. "" above 4 and under 10 cwt. "" above 10 cwt. subject to special quotation. Stationary and Marine Engine Cranks, under 10 cwt. "" above 10 cwt. subject to special quotation. Cross Heads, subject to special quotation ditto Cross Heads, subject to special quotation, according to drawing. Connecting Rods, ditto ditto ditto Levers, &c., ditto ditto ditto Paddllewheel Shafts, ditto ditto ditto Screw and Intermediate Shafts ditto ditto Wrought Wheels ditto ditto ditto Wrought Wheels ditto ditto ditto Wrought Wheels, ditto ditto ditto Wrought Wheels, ditto ditto ditto Wrought Axles, for Carts or Drays. Cart Arms "Waggon Axles, under 1½ cwt. Ditto above 1½ cwt.			1	
Other Plain Forgings Single-cranked Axles, under 3 cwt. ,,,,,, above 3 and under 10 cwt. ,,,,,,, above 10 and under 20 cwt. ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		•		
Single-cranked Axles, under 3 cwt. """, above 3 and under 10 cwt. """, above 10 and under 20 cwt. """, above 20 cwt. subject to special quotation. Double-cranked Axles, under 4 cwt. """, above 4 and under 10 cwt. """, above 10 cwt. subject to special quotation. Stationary and Marine Engine Cranks, under 10 cwt. """, above 10 cwt. subject to special quotation. Cross Heads, subject to special quotation, according to drawing. Connecting Rods, ditto ditto ditto Levers, &c., ditto ditto ditto Paddlewheel Shafts, ditto ditto ditto Screw and Intermediate Shafts ditto ditto Wrought Wheels ditto ditto ditto Wrought Wheels ditto ditto Boss Uses Uses of every description, to sketch or pattern. Patent Axles, for Carts or Drays. Cart Arms """ Ditto above 1½ cwt.				
,, ,, above 3 and under 10 cwt. ,, ,, above 10 and under 20 cwt. ,, ,, above 20 cwt. subject to special quotation. Double-cranked Axles, under 4 cwt. ,, ,, above 4 and under 10 cwt. ,, ,, above 10 cwt. subject to special quotation. Stationary and Marine Engine Cranks, under 10 cwt. ,, ,, above 10 cwt. subject to special quotation Cross Heads, subject to special quotation, according to drawing. Connecting Rods, ditto ditto ditto Levers, &c., ditto ditto ditto Paddlewheel Shafts, ditto ditto ditto Screw and Intermediate Shafts ditto ditto Wrought Wheels ditto ditto ditto Wrought Wheels ditto ditto ditto Boss Uses Uses of every description, to sketch or pattern. Patent Axles, for Carts or Drays. Cart Arms . Waggon Axles, under 1½ cwt. Ditto above 1½ cwt.			1	
n, n, above 10 and under 20 cwt. n, above 20 cwt. subject to special quotation. Double-cranked Axles, under 4 cwt. n, above 4 and under 10 cwt. n, above 10 cwt. subject to special quotation. Stationary and Marine Engine Cranks, under 10 cwt. n, above 10 cwt. subject to special quotation. Stationary and Marine Engine Cranks, under 10 cwt. n, above 10 cwt. subject to special quotation. Cross Heads, subject to special quotation, according to drawing. Connecting Rods, ditto ditto ditto Levers, &c., ditto ditto ditto Paddlewheel Shafts, ditto ditto ditto Serew and Intermediate Shafts ditto ditto Wrought Wheels ditto ditto ditto Wheel Spokes Boss Uses Uses of every description, to sketch or pattern. Patent Axles, for Carts or Drays Cart Arms Waggon Axles, under 1½ cwt. Ditto above 1½ cwt.			1	1
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Boss Uses Uses of every description, to sketch or pattern. Patent Axles, for Carts or Drays. Cart Arms. Waggon Axles, under 1½ cwt. Ditto above 1½ cwt.	Wheel Spekes		1	
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Patent Axles, for Carts or Drays. Cart Arms		-		
Cart Arms	Patent Avles for Corts or Drave			
Waggon Axles, under 1½ cwt	O A	•!		
Ditto above 14 cwt		.1		
		.1		
		1	i	!

Forgings—continued:— Forged Bars, up to 21 inches square, and 8 feet long . above 21 inches square, and up to 21 inches, 6 feet long above 21 inches square, and up to 3 inches, 6 feet long . Square Bars, above 3 in. square, same price as plain Shafting of corresponding weight. Forged Bolts, 1s. 6d. per cwt. more than Square Bars of corresponding dimensions. Ship's Knee-blocks, under 14 cwt. above 11 cwt. . Ship's Knees, smithed to moulds, and holes drilled Keel Pieces, in lengths under 10 cwt. . ditto above 10 cwt. . Ditto Rudder Frames, smithed and drilled complete, Screw Frames, smithed complete, with eyes bored Subject to special quotation, and scarfs planed, Small Anchor Forgings RAILWAY IRONWORK of every description :-Engine Screw Couplings, finished complete . per lb. ditto . ~. Brake Gear ditto . . Locomotive Spring Harness, Drag Gear, ditto . ,, Safety and Drag Chains Engine Keys for Locomotives, in sets . Shifting Keys, (see No. 19, page 45) . Ratchet Braces, (see No. 18, page 45) . MILLWORK of every description. Bright Shafting, to dimensions. (See page 23) SMITH'S WORK of every description.



House Pump. No. 1.



APPLEBY'S PATENT OSCILLATING CONICAL VALVE AND BUCKET.



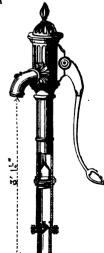
Bracket Pump. No. 3.



LIFT & FORCE PUMP. No. 4.



COTTAGE PUMP WITH VIBRATING MOTION. No. 5.



Per cwt.

YARD OR TANK PUMP. No. 6.

APPLEBY'S IMPROVED CAST-IRON PUMPS,

With Bored Working Barrels, fitted with Patent Buckets and Oscillating Conical Valves, which (see page 50,) will be found simple, durable, and effective. N.B.—The 2½-inch are prepared for 25 feet of 1½-inch Suction Pipe or Hose.	Bore of Working Barrel.	Height from	Spout.	Delco /mithout	Pipes) Fitted.		Bore of Flanged Suction Pipe to suit Pump.	Price of Cast-fron	Foot.	Price of Wind-bore	Bottom Pipe.	Price, per Set, of	Patent Washers.
NO.	in.	ſŧ.	in.	£	8.	d.	in.	8.	d.	8.	ď.	s .	d.
1.—House, Stable, or Sink Pump, for all kinds of Metallic Pipe or Flexible Hose	2 <u>1</u>	1	9	1	2	6	1 g	0	8	2	0	0	8
2.—Cottage, Garden, or Tank Pump, fitted same as No. 1.	21	2	6	1	5	0	1}	0	8	2	0	0	8
3.—Bracket Pump for Bolting on a Plank or to a Wall; fitted for 1½-inch Wrought-iron Tube	21	1	8	ı	6	6		0	8	2	0	0	8
4.—Lift and Force Pump, with reversible Air Cap, Vibrating Motion, Turned Rod working in Gun-metal Gland; fitted for 1½-inch Wrought-iron Pipe	21	1	8	2	2	0		0	8	2	0	0	8
5.—Cottage Pump, with Revolving Cap, Vibrating Motion, &c. fitted as No. 1	21	2	6	1	7	6	11	0	8	2	0	0	8
 Fluted Pattern Pump for Farmyard or general purposes, with long Barrel; adapted for 28 feet of Suction Pipe. 	21	8	1j	1	16	0	11	0	8	2	0	0	8
6A.—Ditto	8	3	14	2	2	0	2	0	11	2	9	0	9
6B.—Ditto	3 3	3	1 }	2	5	0	21	1	1	3	3	1	101
6C.—Ditto	4	3	11	2	10	0	21	1	1	3	3	0	101
6D.—Ditto	4 3	3	11	3	0	0 (8	1	5	4	8	1	6
6E.—Ditto	5	3	1 3	3	15	0	31	1	7	4	9	1	9
This pattern, 3-inch and upwards, may be made 4 feet high. Ditto, 4 inches and upwards, 6 feet high.													
7.—6-inch Pump, plain top, with Tail Piece for 4-inch Suction Pipe, and extra strong Wrought-iron Handle (will raise 10 pints at each stroke)	6	4	0	5	10	0	4 .				···		

APPLEBY'S IMPROVED DEEP-WELL PUMPS.

8.—DEEP-Wiextra Bored prove vious	stro Wo men Wo	ng rki ts ;	ng ng n (rot Ba lac	igh arr k- ine	it-i: el, Do cti	ron and or, ng	da Ta Ro	an ll ilr ds	dle the oiec 9:	, d la e, ft.	eta tea In of	ach et in npe Ma	ed n- er- in	Pump Top or Case.	Main Pipe.	Working Barrel.	Suction Pipe.	Price Complete.	Extra, per Foot, if exceeding 30 Feet.
Pipe, bore), compl	an	dε	11	Be	olt	8.	Nū	ts.	W	7as	he	18,	820	c.,	in. 3	in. 3	in. 2½	in. 1½	£ s. d. 4 10 0	s. d. 2 0
8ADitto															3 }	31	8	2	5 0 0	26
8B.—Ditto															4	4	31	21	5 15 0	2 9
8C.—Ditto															41	41	4	21	6 10 0	3 0
8D.—Ditto															5	5	44	3	7 10 0	3 3

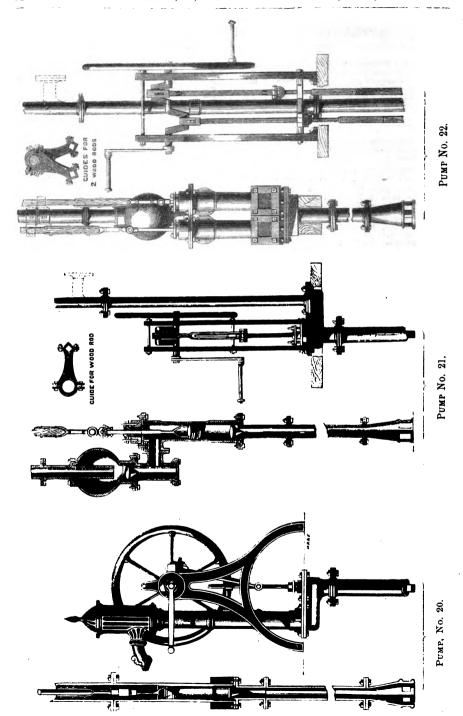
** Inside dimensions are always given.

The above are most efficient for Wells from 27 to 70 feet deep; when the Well exceeds that depth, a Pump on Frame with rotary motion is recommended, (see pages 52 and 53).

All kinds of Flexible Hose and Fittings at Makers' Prices (see page 59).

WROUGHT-IRON PORTABLE PUMPS for Contractors and Well-sinkers, made any depth or size, single or double barrel, to order.





APPLEBY'S IMPROVED DEEP-WELL PUMPS,

WITH WELL-FRAMES AND ROTARY MOTION.

No. 20.

APPLEBY'S IMPROVED PUMP, with well-frame, standard head with spout, bed-plate, 3½-inch rising main, 3-inch bored working barrel to fix in the well, with patent oscillating clack, valve, and bucket, clack-door to get at the valve, 2-inch suction pipe with footpiece, connecting-rods, &c.

Fitted as described above, complete, for Well 30 feet deep, for Lift Pump only-£13.

No. 20F.

Ditto, ditto, if fitted as a combined Lift and Force Pump, complete, for 30 feet deep,—£15 15s.

This Pump may be made to lift 20 feet, and force 80 feet, if necessary.

Extra for greater length of main pipe, rods, bolts, nuts, and washers @ 2/6 per foot.

No. 21.

APPLEBY'S IMPROVED PUMP, with well-frame, delivery pipe, and elbow, 2½-inch rising main, 3½-inch bored working barrel, to fix down the well, with patent oscillating valves, &c. clack-door, air-vessel, with patent valve, 2½-inch suction-pipe with footpiece, connecting-rods, guides, &c.—may be made to lift 20 feet, and force 130 feet.

Fitted as described above, complete, for Well 30 feet deep -£15 15s.

Extra, for 21-inch main pipe, rods, guides, bolts, nuts, washers, &c. @ 1/10 per foot.

Extra for heavy frame, with large Fly-wheel and Handle, for Wells exceeding 80 feet deep. (for No. 20 or 21)—30/0.

The above may be fitted with smaller or larger Barrels and Pipes, if required, at corresponding prices.

No. 22.

APPLEBY'S IMPROVED PUMP, with strong well-frame, and large heavy fly-wheel, delivery pipe, and elbow, double-throw crank, and two handles, 2½-inch rising main, two 3½-inch bored working barrels, with patent oscillating valves, &c., clack-doors, air-vessel, with patent valve, 2½-inch suction pipe with footpiece, connecting-rods, guides, &c.—may be made to lift 20 feet, and force 60 feet.

Fitted as described above, complete, for Well 30 feet deep-£22.

For extra length of 2½-inch main pipe, two wood rods, guides, bolts, nuts, &c.—2/7 per foot.

Extra, if fitted with turned pulley for motive power-20/0.

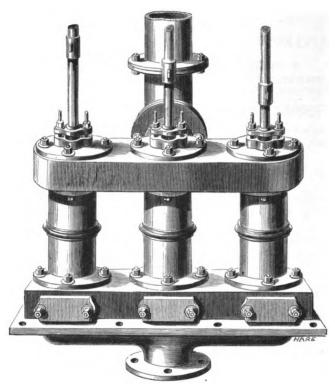
Ditto, if the barrels are lined with copper—from 7/6 to 10/6 each.

Ditto, if fitted with improved lever brass cock, &c. to air-vessel for vent-10/0.

Copper cord, to raise lever, &c.—11d. per foot.

APPLEBY'S PATENT VALVES are specially adapted for hot or cold climates or liquids; are not affected by acids, ammonia, or other chemical properties; will pass coarse gravel and other mineral substances, animal, foreign, pulpy, or vegetable matter without clogging; and are simpler, more effective, and durable than any other. They may be easily examined and replaced by unskilled hands in case of need.





TREBLE BARREL PUMP.

No. 23.

IMPROVED SINGLE, DOUBLE, AND TREBLE BARREL LIFT AND FORCE PUMPS FOR DEEP WELLS,

With full water-ways and valves; door to each valve to give easy access for repairs &c. The barrels all bored and flanges faced, all necessary valves, buckets and rods, gun-metal stuffing boxes, and iron bows or cotters, ready for attaching to the well rods.

Diameter of Barrels.		le B Iron	arrel.		gle B Bras	arrel. s.		Doub Barre Iron	els.	B	oub arre Bras	ls.		le Ba Iron	rrels.		le Ba Brasa	
Inches.	£	8.	d.	£	s.	d.	£	8.	d.	£	s.	d.	£	8.	d.	£	8.	d.
21/2	6	15	Ó	7	13	6	11	0	0	13	0	0	15	0	0	18	0	0
3	7	10	0	8	15	0	12	10	0	14	10	0	17	10	0	20	10	0
31	9	0	0	10	5	0	14	10	0	17	0	0	20	0	0	24	0	0
4	11	0	0	12	5	0	16	10	0	19	0	0	27	0	0	32	0	0
5	17	10	0	20	0	0	25	0	0	28	0	0	40	0	0	45	0	0
6	26	0	0	29	0	0	38	0	0	42	0	0	58	0	0	65	0	0

If with cast-iron air-vessel, extra. If with copper air-vessel, extra. For Hot Liquor add 11/0 per barrel.

No. 24. (For Horse-power).

EXTRA STRONG CAST-IRON WELL-FRAME, for Double and Treble Barrelled DEEP-WELL Pumps to be worked by Horse-power: consisting of bed-plate for top of a well, 5 feet diameter; strong bevelled horse-wheel and pinion placed directly over the well, mounted on wrought-iron shaft, with suitable bearings and draught-pole; yoke and cap for one or two horses; strong wrought-iron crank-shaft, supported by gun-metal bearings between each crank; wrought-iron connecting-rods with gun-metal heads, male and female joints, with turned pin and cotter for attaching to the well-rods, cast-iron well-stage near top of well, to carry the guides, but exclusive of the pump barrels, rods, &c.

Diameter of Pump	Ba	rrel	3.		F	or '	Three Bar	rels.		F	or I	wo Barrels.
Inches.							Price.					Price.
31							£40					£36
4							44					40
5							50					45
6												

No. 25. (For Steam-power).

The above Well Frame (No. 24), if made for STEAM-POWER, is provided with a spur-wheel, driven by a pinion on short shaft, carrying a fast and loose pulley of the required size; in other respects as above specified:—

Diameter of Pump Barrels.						For Three Barrels.								For Two Barrels.				
Inches.									Price.							Price.		
3 f									£36							£33		
4									39							35		
5									43							39		
6																		

No. 26. (FOR HAND-POWER).

STRONG CAST-IRON WELL FRAME, for Treble Barrel Pumps, with strong wrought-iron three-throw crank, fly-wheel, and two handles, brass bearings, strap-head connecting-rods, and guides, ready for attaching to the pump-rods, £40.

Strong ditto ditto, for Double Barrel Pumps, £30.

If with wheel and pinion gear, extra.

If with fast and loose pulley for steam-power, according to size, 25/0 to 60/0 extra.

Cast-iron Girders to fix the pump upon, from 50/0 upwards.

Ditto Well Stages with Roller Guides, 20/0 to 30/0 each.

Roller Guides for Pump Rods, 3/6 each.

Well Rods, and dovetail joints with gun-metal sockets-3-inch, 9d.; 1-inch, 1/0 per foot.

Wrought-iron Clips for securing main pipe to well stages, 1/3 to 2/6 each.

Pump Pipes, Bolts, Nuts, and Washers (see page 51).

Wrought Iron Ladder for fixing in well, 2/3 per foot.





No. 27.

NEW

PORTABLE DOUBLE-ACTION RAM AND BUCKET FORCE-PUMP, FARM FIRE-ENGINE,

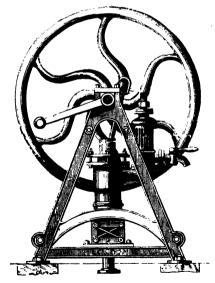
AND

IRRIGATOR.

This powerful Force Pump is capable of discharging about 15 gallons per minute, in a constant stream, to an elevation of 40, or 50 feet; the supply may be drawn from a depth of 20 to 25 feet. This is the best, simplest and most portable Pump yet invented, and at a most moderate cost. It is complete on Wood Barrow with Iron Wheels.

Bore of Barrel.	Plunger.	Gals, per Hour.	Price wit Ram and			Best St Hose pe		Rubber of Hose, pe	delive	ery
			£	8.	d.	s.	d,	s .	đ.	
3½ inches.	21 inches.	600	5	15	0	2	3	1	6	
41	3	900	7	10	0	2	9	1	9	

Patent Wove Canvas Delivery Hose, lined with Linen, may be had at 7d. and 8d. per foot; but it is not nearly so good as India-rubber.



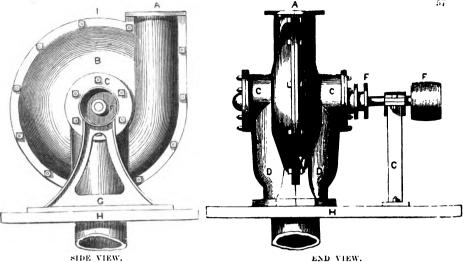
No. 28.

IMPROVED DOUBLE-ACTION FORCE-PUMP.

Mounted on cast-iron frame with fly wheel, for hand or power. This is an extremely simple and durable form of Pump, having but one working barrel: it is fitted with gun-metal plunger and bucket, and delivers at BOTH the IP and DOWN STROKE, discharging the same quantity as ordinary Double Barrel Pumps. It is suited for filling Tanks at Railway Stations, or in Private Establishments, &c. The Pump, as shown, will draw from a depth of about 25 feet from ground-line to water-level in well, and will force to any reasonable height or horizontal distance. It is equally applicable for deep wells, fixing the working barrel down the well about 15 or 20 feet above the water level. Prices as below, with Brass Plunger, Gland, and Bucket, finishing with flanged inlet and outlet for suction and delivery pipes :-

Bore of Barrel.	Di uneter of Plunger.	Ga's per Hour at 30 to 35 Strokes per Minute.	Price for I	danua	1 Power.
44 inches.	3 inches.	500 to 700	£20	10	0
5 ,,	34 ,,	700 to 900	22	0	0
5 .,	4 ,, Air-vessel	900 to 1200 and Draw-off Cock extra.	26	10	0





GWYNNE'S PATENT CENTRIFUGAL PUMPS.

TABLE OF THE SIZES OF THE PUMPS USUALLY MADE.

. To find the Power requisite to work the Pump, multiply that required for one foot, by the number of feet the water or other fluid has to be raised.

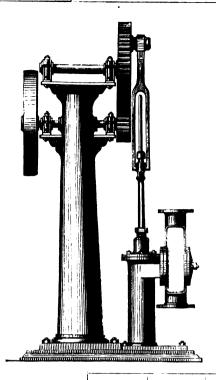
	Number of Pump.		Diameter of Suction Pipe	Diameter of Pulley.†	llorse-Power to work the Pump 1 foot high.	Gallons of Water raised per Minute	Prices of the Pumps.	Places and Purposes for which the Pumps are especially applicable.
For medium lifts, asy from 1 to 70 feet high.	1 2 3 *4 *5 *6 *7	Inches. 2 3 4 5 6 9 12	Inches. 3 4 5 6 7 10 13 16	Inches. 4 5 6 93 13 18 22 28	·012 ·030 ·065 ·130 ·217 ·608 1·30 2·20	25 70 150 300 500 1,400 3,000 5,000	£10 14 18 27 45 75 130 240	Dye-houses, wash-houses, private and public baths, paper, pulp, and fulling mills, cotton mills, breweries, distilleries, tanneries, starch-works, chemical works, steamships; for supplying water to towns, cities, and manufactories in general.
For high lifts, say to 250 feet high.	*1 A *2 A •3 A *4 A	3 5 9 12	4 6 10 13.	12 18 24 36	·055 ·217 ·608 1·30	125 500 1,400 3,000	£40 85 250 500	Fire-engines, coalpits, mines, deep wells, waterworks, for cities, towns. &c. &c.
For low lifts, from 1 to 30 feet high.	*B B° *B B *1 B 2 B 3 B 4 B 5 B	6 7 9 10 12 15 30 36	7 8 10 10 12 16 30 36	8 ³ / ₄ 10 10 12 15 ³ / ₄ 18 24 36	*217 *400 *430 *700 1 *30 2 *20 5 *00 8 *55	500 750 1,000 1,500 3,000 5,000 12,000 21,000	£33 38 40 50 95 140 400 650	Works of drainage and irrigation, dry-docks, coffer-dams, canals, drainage of marshes, lowlands, lakes, rivers; the irrigation of coffee, cotton, indigo, sugar-cane, and rice estates; for builders, contractors, public works, &c. &c.
For small quantities, requiring comparatively few revolutions. For hand-work	C 1 C 2 C 3	1 2 4	2 2 2 3 5	4 5 6	·012 ·025 ·045	20 40 80	£12 16 23	Adapted for working by hand- power, and applicable for all other purposes.

**Most of these sizes are kept in stock, and can be immediately delivered.

* The Suction Pipes in these Pumps are not round, and require a taper-pipe to unite them to round pipes. Prices of ditto, for Nos. 4, 5, 6 B, BB, and BI—35s. each; for the other sizes—45s. to 85s each.

† The speed at which the Pump should be driven, which is easily arranged, will depend on the size of Pump, and the height the water has to be raised—the large requiring less speed than the smaller sizes; the speed of any size can be had on application. The C Pumps, in proportion to the quantity, require much less speed than any of the other sizes.

Where the Pump is placed above the fluid to be raised, a foot-valve is required. Single flanged, prices from 25/0 each. Double flanged, from 40/0 each.



Diameter of

Barrel.

HOLMAN'S PATENT

DOUBLE-ACTION PUMP,

With pillar driving gear, mounted on stout cast-iron base plate and column, as drawing. This excellent Pump is adapted for irrigation, or for any manufacturing purpose where it is requisite to raise large quantities of liquids, hot or cold. Being independent of any walls, &c. for support, it merely requires fixing firmly to the ground or floor, and may be driven by steam or any other motive power.

Brass Internal

Barrel.

Gailons per Hour at 40

Strokes per Minute.

Inches.	Inches.	£ s. d		£ s.	d.	
3	12	31 10)	33 0	0	1,200
4	10	33 0)	34 0	0	2,000
4	12	35 0)	36 1 0	0	2,500
5	12	39 0 ()	42 0	0	3,300
5	15	41 0 ()	43 10	0	4,000
6	12	42 0 (,	47 0	0	5,800
6	18	47 10 (,	52 0	0	8,500
rubber valves tinuous stream	s, brass barren	el and valve e up and do	e seats, wn strol	delive ce, oc	ering a cupies	ent Bar, India full and con small space, is and the pum
may be worke						wild the plant
	Prices	for Hand or	Steam .	Power	•	
3 inch Barre	l. 6 inch Strol	ke. £5 10 0	deliver	s 1.00	0 gallo	ns per hour.*

Length of

Stroke.



6 10 0 1,800 ģ 2,800 5 10 0 4,000 12 0 0

Iron Bored

Barrel.

Prices and particulars of any other PATENT PUMPS may be had on application.

[·] These quantities are calculated at the rate of 60 feet per minute.



THE HYDRAULIC RAM,

OR SELF-ACTING WATER ENGINE,

Will work day and night without requiring attention, will raise water to any height and distance without manual labour; it is especially adapted for the supply of Mansions, Farm-buildings, &c. where a small fall can be obtained.

The following particulars are requisite before giving estimates:—

The FALL in feet which can be obtained from the stream or source of supply.

The HEIGHT to which the water is required to be raised.

The horizontal DISTANCE from the source of supply to the place of delivery.

The QUANTITY of water running per minute, and the quantity required to be raised in a given time.

Prices on application.

Drawings and Estimates for Pumps and Hydraulic Machinery of every description promptly supplied on application.

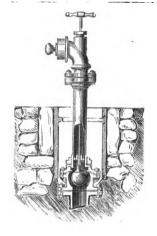
FLEXIBLE HOSE PIPES AND PUMP FITTINGS.

		1]	1 1		1 <u>1</u>		2	2	Ŷ	:	3	inches.
Suction Hose.	_				-		-						
Best leather, copper-rivetted, wired inside	8.	d.	8.	d.	8. 4	d. 0	8. 4	d. 6	s. 5	d. 3	s. 6	d. 0	per foot.
Best Vulcanized India-rubber, wired inside	2	2	2	8	3	4	4	2	5	0	6	6	,,
DELIVERY HOSE.													
Best Leather, copper-rivetted .	1	7	1	9	1	10	2	2	2	6	3	0	,,
Best Vulcanized India-rubber .	1	10	2	0	2	4	3	0	3	6	4	0	,,
Second quality, ditto	1	4	1	6	1	9	2	2	2	8	3	3	,,
Best Wove Canvas Delivery Hose, without seam					1	10	2	3	2	9	3	6	per yard.
Second quality, ditto	1	3	1	6	1	8	2	0	12	6	3	0	,,
Strong Gun-metal Swivel Hose Unions	3	8	5	8	6	6	9	10	14	4	21	3	each

Wrought-iron Wrenches for Hose Unions, 3/6 each.
Copper Branch-pipe with brass jet, small, 15/0 each.

Copper Branch-pipe, larger sizes, 20/0 to 30/0 each.

Brass Jet and Spreader extra, 7/6 each. Leather Fire Buckets, large 10/0, small 8/0. Canvas ditto, 4/6.



PATENT HYDRANTS or FIRE-COCKS, 25/0 each.

STAND-PIPE for ditto, single head, £3 16/0 each.

Ditto ditto, double head, £4 15/0 each.

STREET-BOX, with cover, 12/6 each.

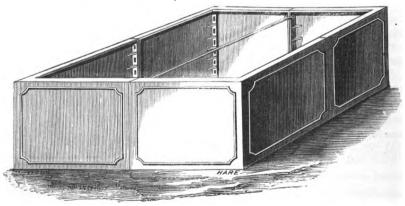


WROUGHT-IRON RISING MAIN PIPES FOR PUMPS.

These Pipes are usually made in 10 or 12 feet lengths, and are lighter and stronger than Cast-iron Pipes.

		•				8.	d.	1						8.	d.
61-in.	dia.	to clear	6-in.	buckets,	per ft.	. 7	0	16-in.	dia.	to clear	15-in.	buckets,	per ft.	15	0
8 §-in.	,,	,,	8-in.	,,	٠,,	9	0	19-in.	,,	,,	18-in.	,,	٠,,	18	0
10 -in.	,,	,, 1	10-in.	,,	,,	10	0	26-in.	,,	,,	24-in.	,,	,,	24	0
13-in.			l 2-in.	,,	••	12	0	1							

CAST-IRON WELL BORE PIPES, for Artesian Wells, with flush joints, turned and fitted with Screws, any size or length (special quotation). STEEL SHOES for ditto, and Boring Tools of all kinds.



CAST-IRON TANKS OF EVERY DESCRIPTION.

Cast-iron Tank Plates, all sizes, at 7/6 per cwt.

ditto, with planed edges, at 9/0 per cwt. Wrought-iron Tanks and Cisterns. These may be delivered in plates, or fitted and fixed complete, to order.

OIL CISTERNS, SHIPS' TANKS, SALT PANS, CASKS, KEGS, &c.

CASTINGS FOR GAS AND WATER-WORKS.

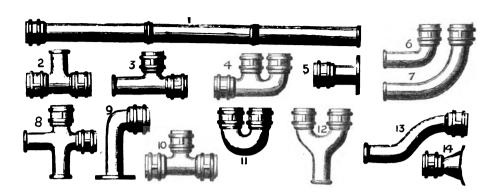
Inches Bore	$1\frac{1}{2}$	2	3	4	5	6	In. bore.
SOCKET PIPES, for Gas or Water	1/3	1/5	2/2	3/3	4/5	5/7	per yard.
Ditto, Elbows, Bends, Tees, Branches	16/	14/	13/6	13/	13/	13/	per cwt.
Special quotation for larger sizes or quantities. Stand-posts, Stand-pipes, &c. Hydrants or Fire-plugs. (See page 60.)							
FLANGED PIPES, for Gas, Steam, or Pump-work.	2/6	2/10	4/	5/2	7/	8/6	per yard.
Ditto, Elbows, Bends, Tees, &c	18/	16/	15/6	15/	15/	15/	per cwt.
Elastic Washers for Jointing Flanged Pipes Screws and Nuts for ditto, 2/3 to 3/per dozen.	5/9	7/0	8/6	9/6	11/	13/	per doz.

Plug Cocks for So	eket a	na r	lange Pipes. (See page 64).			
Sluice and	Throt	le V	alves. (See page 64).	£ s.	d.	
Cast-iron Gas Retorts, best quality.	£ s.	d.		0 12	2 6	
D shape, any size, per ton	6 10	0	Furnace Pans ,	0 18	3 ()	
Ditto, ditto, B.B. ditto.	7 10	0	Sight Holes ,,	0 14	1 0	
Retort Mouth Pieces and Lids,			Scrubbers, Condensers, and			
per cwt.	11	6	Purifiers (cast in loam) . ,,	0 13	3 0	
H Pipe and Caps for ditto ,,	0 13	0	Pillars for ditto ,,	0 11	6	
Hydraulic Mains ,,	0 12	0	Columns with Caps and			
Ascension Pipes ,,	0 12	6	Wheels ,,	0 11	6	
Furnace Doors, unfitted . ,,	0 13	0	Tank Plates. (See page 60).			
Fitting, extra each			(*** 1.8. **)			

Street-lamp Columns, various patterns, from 25/0 each.
Wrought-iron Tank-bolts and Nuts, any size. (See pages 42 and 43.)
WROUGHT-IRON GAS-HOLDERS, any size, to order.
Fixed or Portable Gas Works, for Oil or Coal Gas, to supply any number of lights, for Factories, Mansions, Public Buildings, &c. by special contract.

BUILDERS' CASTINGS OF EVERY DESCRIPTION.

	P	er to	n.		P	er to	n.
		8.	d.	7717 701	£	8.	d.
Ashes Grates	14	0	0	Kiln Plates from			
Barrow Wheels, any size	13	0	0		12	0	0
Contractors' Waggon Wheels and				Mash Tub Bottoms ,,			
Pedestals (see page 41) . from	9	0	0	Pans, jacketed, for steam, (cast			
Columns, plain, solid ,,	7	0	0		10	10	0
Ditto, , hollow ,,	8	0	0	Pile Shoes (special rate) ,,			-
Cannon, any size, of best cold				Railway Chairs (ditto) ,,			
blast metal ,,				Register Stove Metal ,,	16	0	0
Dampers and Frames (large) ,,				Shot and Shall according to size		v	·
Engine Castings in general . ,,	12	0	0	Sugar Mill Coatings	10	0	0
Ditto, Cylinders, according		v	٠	Cook Waights	6	Ö	ő
to size and nottom				Sewer Grates and Frames		-	-
				Stable Posts and Sills (see manner	11	U	0
Ditto, Fly Wheels; good				Stable Posts and Sills (see pages	10		_
patterns of all sizes ,,		^	^	71—74)		0	0
Furnace Bars (large) ,,	8	0	0	,, Grates and Traps (see page 72).,		10	0
Ditto, doors and frames (large) ,,	10	0	0	Staircase Bars and Panels . ,,	16	0	0
Ditto, ditto (small) ,,	12	0	0	Ships' Pump Castings (unfitted),,	10	0	0
Girders, plain (see page 41). ,,	7	0	0	Street Grates and Frames	10	0	0
Hay Racks (see page 73) . ,,	12	0	0	Wall Plates ,,	12	0	0
Hot Plate Metal ,,	12	. 0	0	Windows, various patterns (see			
Kitchen Range Metal ,,	12	0	0	page 74) , ,,			



HOT-WATER PIPES AND CONNECTIONS.

	All pro	oved to High	Pressure.	i
	2	3	4	In. diam.
	£ s.	£ s.	£ s.	
1. Hot-water Socket Pipes, 6 ft. long	1 6	2 6	3 0	per yard.
Ditto, 6 ft. or 9 ft. long	-	2 6	3 0	,,
Ditto, 3 ft. (or under)	1 8	2 9	3 3	each.
Ditto, with Trough for Vapour	-		6 0	per yard.
Ditto Coil Pipes, without Sockets .	1 8	2 6	3 6	,,
6. Elbows, Common	1 11	2 10	3 8	each.
7. Ditto, Long	2 7	4 6	7 0	,,
Ditto, with Double Sockets (inside)	2 0	3 4	4 6	,,
Ditto, with ditto (outside)	2 8	4 6	7 4	,,
Ditto, with ditto inside, ith of a circle	2 0	3 3	4 6	,,
Ditto, with ditto outside, ditto	2 8	4 6	7 0	,,
Ditto, double	3 0	4 10	7 0	,,
Ditto, diminishing. (See page 63).		1		
9. Ditto, Flange and Socket, long	2 10	3 9	5 2	,,
Ditto, ditto, short	2 2	3 4	5 0	,,
Ditto, ditto, for Boiler-top	3 7	4 6	5 0	,,
13. Swan Necks	3 6	6 6	8 0	,,
S Pipes	3 0	6 6	8 0	,,
14. Boiler-top, with Flange and Socket, straight.	3 4	4 6	5 0	,,
11. Syphons, close or wide	2 2	4 0	7 6	,,
Ditto, 3-way	3 6	7 0	10 6	,,
Ditto, 4-way	6 0	12 6	19 0	,,
12. Ditto, with Spigot or Socket outlet	3 2	6 0	8 9	,,
Ditto, 3-way, with ditto or ditto	5 0	10 6	13 0	,,
4. Ditto, with Elbow	3 0	6 6	9 0	,,
Ditto, 3-way, with ditto	6 0	10 0	16 0	,,

HOT-WATER PIPES AND CONNECTIONS-continued.

•	All Prov	ed to High	Pressure.	
	2	3	4	In. diam.
	£ s.	£ s.	£ s.	
2 & 3. T Pipes, with 2 Sockets	3 0	5 0	6 6	each.
Ditto, with 3 Sockets	3 3	5 9	7 6	,,
Ditto, diminishing outlets. (See below).	1			
H Pipes	6 11	10 3	13 0	,,
Branch Pipes, with 1 or 2 Sockets	4 6	6 6	9 6	,,
Y or Branch Pipes, with 2 ditto	5 4	7 0	12 0	,,
8. Cross Pipes	6 0	10 0	12 0	,,
5. Flange Sockets	2 4	3 3	4 0	,,
Ditto, Spigots	2 0	2 4	4 0	,,
Double Sockets	1 9	3 2	4 0	,,
Collars, Single	1 4	2 0	2 8	,,,
Ditto, Double	2 6	3 4	4 4	,,
Ditto, Sliding	1 2	1 9	2 1	,,
Blank Sockets	10d.	1s. 6d.	2s. 0d.	,,
Ditto Spigots	4½d.	10d.	1s. 2d.	,,
DIMINISHING CONNECTIONS	4 × 3	4 × 2	3 × 2	Inches.
Ditto Pipes	3 0	2 4	2 0	each.
Ditto Sockets	3 9	3 4	2 3	,,
Ditto Elbows	8 8	8 0	6 6	,,
Ditto T Pieces	6 6	6 6	5 2	,,
Ditto Nipples	1 9	1 4	1 4	1
Ditto Cross Pipes	13 6	12 0	10 0	,,

Coil Elbow for 2-inch Pipe, 1/9 each. Two-branch Coil Syphon for 2-inch Pipe, 3/4 each. Three-branch ditto, 4/6 each. Pipe Stands, 7d. each.

Pipe Supporters, 41d. and 9d. each.

COIL BOXES.

Number of Sockets					
Single Coil-Box with Projecting Sockets for 2-inch Pipes, each	s. d.	s. d.	s. d.	s. d.	8. d.
Single Coil-Box with Projecting Sockets for 2-inch Pipes, each	10 3	12 0	14 0	15 6	17 0
Ditto with Sunk Sockets for ditto	6 6	8 0	9 0	10 0	11 6
Double ditto, with ditto to order	12 0	15 0	18 0	21 0	24 0

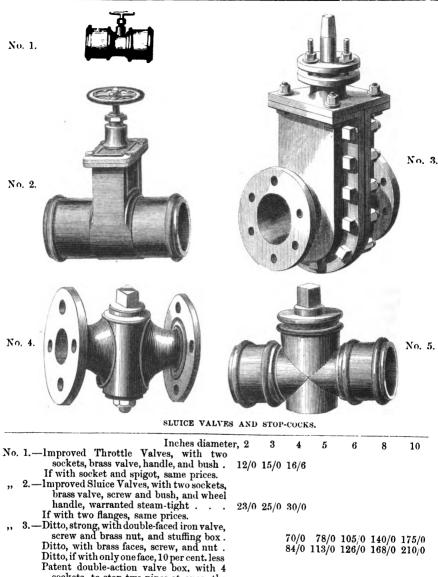
Coils of Circulation Pipes, to order.

Iron Borings, finely sifted for Cement Joints, 10/9 per cwt.

Ditto ditto 5 cwt. and upwards, 9/0.

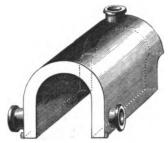
ORNAMENTAL GRATINGS, variety of patterns.

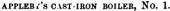
ORNAMENTAL COIL CASES, any size, to order.

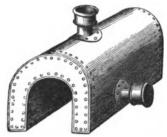


sockets, to stop two pipes at once, the other two to circulate. 36/0 42/0 48 0 Street or surface box with cover, for sluice valves. 12/6 each. 4.-Iron Stop-cock, with iron plug, and two flanges or two sockets. 13/0 28/0 40/0 Ditto, if with gun-metal plug . 30/0 52/0 85/0 5.-Iron Stop-cock, with extra strong brass plug, and screw cap, solid bottom, and wrought-iron handle, warranted steam-42/0 66/0 90/0 Patent Angle Valve 18/6 25/0 30/0 Patent Horizontal ditto . 19/6 27/0 32/0 Steam Cocks and Fittings. See pages 67, 68).

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WROUGHT-IRON SADDLE BOILER, No. 14.

CAST AND WROUGHT IRON BOILERS.

No. 1.—Appleby's Improved Cast-Iron Arch Boilers, with Flued Ends, and two or three sockets.

OUTSIDE DIMENSIONS.

No	1	2	3	4	5	6	7	8	9	10	11	12	13	No.
Inches long	24	24	30	30	30	36	36	42	42	48	48	54	66	Inches long.
,, wide	15	20	17	19	22	24	23	23	24	27	30	32	32	,, wide.
,, high	15	15	16	17	18	18	21	21	22	24	27	28	28	,, high.
Heating power, about	300	400	450	550	800	900	1000	1120	1300	1800	2300	3000	400L	Feet of 4-inch pipe.
Contents of Boiler and								İ		l				
Pipes, about	162	216	243	40:	432	486	520	594	689	972	1242	1620	2160	Gallons.
Price, each	668	72s.	90s.	100	148	120s	1448	156s	1688	2228	240s	300s	3358	Price, each.

DITTO, with IMPROVED RIBBED SIDES, for brick side flues. Price from 1/0 to 4/8 each Boiler extra.

No. 2. APPLEBY'S IMPROVED TUBLIAR CHECK DRAFT, and flued ends, same dimensions as No. 1.

No. 1 2 3 4 5 6 7 8 9 10 11 12 13 72/0 84/0 102/0 120/0 132/0 144/0 168/0 186/0 198/0 252/0 270/0 330/0 370/0 each

No. 3. WITH IMPROVED RIBBED SIDES, for brick side flues, in other respects the same as No. 2. Price from 1/0 to 4/8 each Boiler extra.

No. 4. APPLEBY'S IMPROVED ARCH BOILERS, with tubular check draft ends, and flued sides; all water way; are a substitute for brick side flues. In other respects same as No. 2. Price from 10/0 to 40/0 each extra.

N.B.—The dimensions of No. 1 Boilers refer to all the above, which may be made longer or shorter, or with an increased number of sockets.

Boilers with Tubular Check Draft Ends possess the following advantages, viz: Increased heating surface, capacity, power and economy, and free circulation for water to flow from side to side; when only one return is required, this is most essential.

No. 5. Bell Boilers with 2 Arms, cast in loam.

No. 6. CYLINDRICAL BOILERS with 2 Sockets.

18 × 15 20 × 17 23 × 17\frac{1}{2} 24 × 18 24 × 22 28 × 22 26 × 24 30 × 24 inches } each.

£2 2 0 2 17 0 3 12 0 4 1 0 4 7 0 5 8 0 6 6 0 6 12 0 price } each.

No. 7. Double Conical Boilers, with Socket on Crown, and Arm on bottom.

 18×16 21×18 24×20 26×24 26×30 27×34 30×30 in. high and dia. £3 12 0 4 4 0 5 5 0 6 6 0 7 17 0 9 3 0 9 0 0 price . . . \ each.

No. 8. APPLEBY'S IMPROVED HORIZONTAL BATH BOILER, 18 × 6 inches, with flue side plates and bosses, bored and tapped for 1, 1½, or 1½-inch wrought-iron tube, 15/0 each.

No. 9.—APPLEBY'S IMPROVED CAST-IRON FLAT ARCHED BOILER (self-flued).	
21 in. long × 15 in. wide £1 7 6	
24 in. long × 18 in. wide 1 15 0	
Set of 16 in. Grate Bars, with single and double bearers,	
For 21 in. Boiler £0 5 0 per set.	
For 21 in. Boiler	
No. 10.—Independent Cylindrical Hot-water Boiler Stove, with stand, drawer, revolved	ving
feeder, flue top, and bosses for wrought-iron flow and return pipes.	
18×15 in £4 0° 0	
$20 \times 17 \text{ in.} \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots$	
24 × 18 in 7 0 0	
$30 \times 18 \text{ in.}$ 8 0 0	
No. 11.—Improved Welded Wrought-iron Independent Cylindrical Hot-water Boi	
Stove, with stand, ash drawer, smoke flue, and nozzles for flow and return pipes	š.
40×15 inches £5 12 6	
44 × 15 inches 6 12 6	
No. 12.—Improved Independent Wrought-iron Saddle Boiler, enclosed in self-contain	ined

No. 12.—IMPROVED INDEPENDENT WROUGHT-IRON SADDLE BOILER, enclosed in self-contained fire brick flues, with sheet-iron outer casing, nozzles for flow and return pipes, castiron end plates, with sliding double fire and ash doors, flue doors, damper, smoke flue, grate bars, bearer, and dead plate, complete and ready for fixing, requiring no brickwork or setting. Will heat about 600 feet of 2-in. pipe. Outside dimensions 3 ft. long × 2 ft. 4 in. wide × 2 ft. 2 in. high . £11 0 0

No. 13. Welded Wrought-iron Arch Boilers, without angle iron or rivets; water space from 1½ to 2½ inches clear; proved to a high pressure.

OUTSIDE DIMENSIONS.

No	1	2	3	4	5	6	7	8	No.
Inches long , wide , high To Heat about .	18 14 13 200	24 16 14 300	30 18 16 450	36 18 16 600	36 20 18 750	42 20 18 900	48 20 18 1000	48 24 18 1100	Inches long. ,, wide. ,, high. Ft. of 3-in. pipe.
Price, each .	£2 10s.	€3 10s.	£5 0s.	£6 0s.	£7 0s.	£7 15s.	£9 10s.	£10 10s.	Price, each.

Intermediate and larger sizes made to order. Sockets and fixing extra. Manhole cover and bridge 4/6 to 7/0 extra.

No. 14. BEST RIVETTED WROUGHT-IRON ARCH BOILERS, with 2 to 3-inch clear water-space.

OUTSIDE DIMENSIONS.

No	1	2	3	4	5	6	7	8	No.
Inches long , wide , high To Heat about .	18 14 13 200	24 16 14 300	30 18 16 450	36 18 16 600	36 20 18 750	42 20 18 900	48 20 18 1000	48 24 18 1100	Inches long. ,, wide. ,, high. Ft. of 3-in. pipe.
Price, each .	£2 5s.	£4 15s.	£6 0s.	£7 10s.	£9 0s.	£10 0s.	£12 0s.	£13 0s.	Price, each.

Any other shape or size made to order. Sockets and fixing extra.

Double Doors and Frames, recessed; fitted with wrought-iron latch, bands, &c.

DIMENSIONS OUTSIDE THE FRAME. 23×14 25×16 27×18 31×23 inches. Price, each . 18/0 21/0 25/0 33/0

SYLVESTER'S PATENT DOORS AND FRAMES, for Furnaces, Hot-water Boilers, Stoves, Hot Plates, Cleaning Flues, and General Domestic Purposes, fitted with Trued Surfaces; the doors slide on inclined planes, which shut AIR-TIGHT by their own gravity, ensuring perfect control and Economy of Fuel, &c.

With Bright Bearing Bars and Friction Rollers to Upper Doors. No. 1, Frame, 29 in. wide \times 23 in. high; Upper Door $8\frac{1}{2} \times 8\frac{1}{2}$ in.; Lower Door, $8\frac{1}{2} \times 5\frac{1}{2}$ in. £4 4s. each. , 2, Ditto 27 ,, \times 24 ,, ditto 10 \times 8 ,, ditto 10 \times 5 ,, £5 8s. ,, 3, Ditto 26 ,, \times 30 ,, ditto 9 \times 9 ,, ditto 9 \times 12 ,, £6 0s. ,, 4, Ditto 32 ,, \times 32 ,, ditto 12 \times 9 ,, ditto 12 \times 9 ,, £8 14s. ,,

DAMPERS AND FRAMES. INSIDE DIMENSIONS:-

 8×6 10×7 12×9 14×10 inches. Price, each . 1/9 3/4 4/9 6/8

GRATE BARS AND BEARERS, to any size, at 9/0 to 11/0 per cwt.

CISTERNS AND COVERS.

CONTENTS, IMPERIAL MEASURE :--

Size Contents Price	:	:	:	:	12×64×12 3 Galls. 5s. 8d.	16×64×12 4 Galls. 9s. 0d.	12×12×12 5½ Galls. 12s. 0d.	12×9×18 64 Galls. 12s. 6d.	124×124×18 9 Galls. 15s. 0d.	18×9×18 in. deep. 10 Galls. 21s. 0d. price.
Size Contents Price	:	•	:		24×9×18 13 Galls. 25s. 0d.	18×9×24 13 Galls. 25s. 0d.	12×12×30 15 Galls. 27s. 0d.	15×15×24 18½ Galls. 30s. 0d.	18×18×24 27 Galls. 36s. 0d.	24 × 24 × 24 in. deep. 50 Galls. 66s. 0d. price.
Size Contents Price	:	:	•	:	12×9×6 13 Galls. 4s. 6d.	12×12×6 2§ Galls. 5π. 3d.	18×12×7 5 Galls. 11s. 6d.	25×15×12 15 Galls. 26s. 0d.	24 × 24 × 36 ii 72 Galls. 90s. 0d. p	n. deep. orice.

STEAM COCKS, AND ENGINEERS' BRASS WORK.

Glass Water Gauge, Gun-metal, Wood Handles. I inch. 25/6 28/0 32/034/0per set. Glass Water Gauge, Gun-metal, Wood Handles and Flanges. ł å 3 inch. 28/0 32/034/038/0 per set. Small ditto for portable Engines å inch. with guard 9 21/9 24/3per set. Steam Whistle. 14 2 21 3 inches. 23/0 10/3 14/0 19/0 each. Compound Lubricator, Gun-metal, 2 Cocks, Ebony or Brass Handle. 2 21 3 3 Î inches. 10/9 14/9 17/6 20/ Common Lubricator, with 1 Cock. 2 21 3 31 inches. 11 7/9 10/ 13/9 16/9 22/6 5/9 Ditto Globe pattern, same prices as No. 6. Ditto 8. Syphon Grease Cup, with cover. 1 11 11 13 21 inches. 2/1 2/4 2/7 2/11 3/9 5/96/4each. Syphon Grease Cup, without cover, new pattern. 11 14 13 21 inches. 1 2/4 3/2 4/9 6/4each. 2/3 2/7 2/11 Syphon Grease Cup, without cover. 2 23 inches. 1 11 11 13 1/11 2/73/0 4/6 5/9 each. 2/12/3Gun-metal Steam Stop Valve. 2 inches. ş 3 1 11 11 17/0 10/0 13/0 32/0each. 5/0 7/0 Ditto, with flanges. 2 inches. 3 1 14 42/0each. 15/0 25/0 10/0 inch.

ł

1/11

2/3

2/10

Small Cylinder Cock.



No. 11.



No. 14.



No. 19.

No. 13. Small Steam Plug-cock.

 $\frac{1}{4}$ $\frac{1}{8}$ inch. $\frac{1}{2/7}$ $\frac{1}{2/11}$ $\frac{1}{3/9}$

14. Gun-metal Steam-cock, screwed for iron tube.

 $\frac{1}{4}$ $\frac{8}{8}$ $\frac{1}{4}$ $\frac{2}{1}$ $\frac{1}{1}$ $\frac{1}{1}$ $\frac{1}{2}$ $\frac{2}{1}$ inches. 3/0 3/9 4/9 7/0 10/9 15/6 24/0 37/6 Ditto, with flanges to order.

 Gun-metal Full-way GaugeCock, screw bottom, wood or brass handle.

 $\frac{1}{2}$ inch. $\frac{5}{8}$ inch.

, 16. Small Pet-cock, with round nose.

 $\frac{1}{3}$ $\frac{1}{3}$ $\frac{1}{2}$ $\frac{1}{5}$ inch. $\frac{1}{3}/2$ $\frac{1}{3}/10$ $\frac{1}{4}/3$ $\frac{1}{5}/9$ each.

14. Improved Lubricator, or Hollow-plug Tallow Cup.

18. Gun-metal Plug Cock, male and female ends, rough.

$$\frac{1}{2}$$
 $\frac{3}{4}$ $\frac{1}{10/0}$ $\frac{1}{16/0}$ $\frac{1}{12}$ $\frac{2}{100}$ inches.

 Iron Junction, or Starting Valve, for steam, water, or gas, with side outlet.

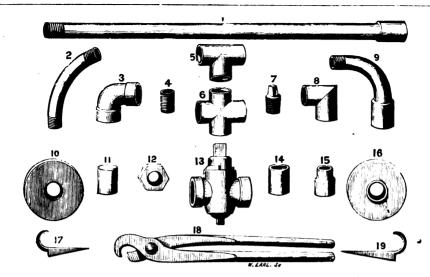
2	3	4	inches.
25/6	41/0	63/0	
Ditto, with two	oranches.		
2	3	4	inches.
41/0	63/0	82/0	

No. 20. Round Locomotive Spring Balance, with Screw and Nut made small for portable engines.

ÌЪ	21	3	31	4 inches.
20 to 45	$10\tilde{/3}$	10/9	11/6	12/0
,, 50	10′/9	11/6	12/0	12/9
,, 60.	11/6	12/0	12/9	13'/6
,, 70	12/0	12/9	13/6	14/0
,, 80	$12'\!/9$	$13'\!/6$	14/0	14/9

These prices include patent Locomotive Balances marked either on the outer or inner tube, and round Loco. Balances, marked on flat side. These balances are made up to 150 lbs, and 12-inch range.

Vacuum gauges same sizes and prices. Bourdon's or any other patent steam pressure gauges.



BEST WELDED WROUGHT-IRON TUBES, FOR GAS, STEAM, OR WATER.

	Internal Diameter Inches		18		4		3 .	1	1 2		34		1	1	1	1	$\frac{1}{2}$	1	34	1	2	2	14	2	21	1 5	23	1	3
10.	Tubes, 2 to 14 feet long, per foot .		d. 3		d 31/4		$\frac{d}{3\frac{3}{4}}$		d. 41		d. 5		d. 7		$\frac{d.}{10}$		$\frac{d}{1}$	s. 1	d. 6		d. 8		d. 6		d		d. 3		9
2	Springs, (9) Bends each	0	$6\frac{1}{2}$	0	61	0	7	0	8	0	11	1	3	1	9	2	3	3	3	4	3	6	6	11	0	15	6	19	0
3	Elbows, Round, Malleable . ,,	0	5	0	6	0	6	0	7	0	9	1	1	1	6	2	0	3	0	3	6	4	9	8	9	11	6	14	9
8	Ditto, Wrought Iron ,,	0	$6\frac{1}{2}$	0	62	0	7	0	8	0	10	1	3	1	9	2	3	3	3	3	9	5	0	9	3	13	3	16	3
4	Nipples (7) Plugs (11) Caps . ,,	0	4	0	4	0	$4\frac{1}{2}$	0	41/2	0	5	0	6	0	8	0	9	1	1	1	3	2	0	2	6	3	3	4	3
5	Tees, Equal or Diminishing . ,,	0	$6\frac{1}{2}$	0	61	0	7	0	9	1	1	1	6	2	0	2	6	3	6	4	0	5	6	10	6	14	6	18	0
6	Crosses ,,	1	0	1	0	1	1	1	5	1	9	2	3	3	0	3	6	4	3	4	9	9	6	17	3	23	0	29	0
10	Flanges, Wrought ,,	0	10	0	10	0	10	1	0	1	2	1	4	1	6	1	9	1	11	2	6	3	9	5	0	6	9	8	6
16	Ditto, Malleable, with Collars outside diameter	0	{	i s.	2 n. 2 ³ / ₄ d.	i s.	2 n. 3 d. 4\frac{1}{3}	i:	5 n. 3\frac{1}{d}. 4\frac{1}{2}	i.	7 n. 4 d. 5	i 4 8.	9 n. 13/8 d.	i 4	0 n. 13 d. 8	i 5.	5 n. 5\frac{1}{4} d.	1	1	i: 5	0 n. 3 4 d. 3	2	0	2	6	3	3	4	93
13	Main Cocks ,,	2	6	2	6	2	6		0		9	5	0	8	6	11	0	15	0	18	0	30	0	39	0	51	0	59	0
14	Plain Sockets ,,	0	$2\frac{1}{2}$	0	21	0	3	0	3	0	4	0	5	0	7	0	8	0	10	1	0	1	6	2	9	4	0	5	0
17 19	} Pipe Hooks ,,																												
18	Pipe Tongs (See pages 44-5)																												
	Short Pieces under 2 feet	0	5	0	6	0	7	0	8	0	9	1	1	1	6	2	0	2	8	3	0	4	6	6	3	8	0	9	0
1	Connecting Pieces or Long Screws	0	7	0	8	0	9	0	11	1	2	1	6	2	0	2	3	3	0	4	0	5	3	7	3	9	0	10	6

Discount.

Gas Tubes.

Galvanized.

For Steam.

Brazed Copper Steam Tubes 1 to 3 inches diameter at 1/4½ per lb. Ditto ditto Gas Tubes § to 3 inches diameter 1/5 per lb. Ditto Brass Steam Tubes 1/1½ per lb.

Ditto ditto Gas Tubes § to 3 inches diameter, 1/2 per lb.

Solid or Seamless Copper Tubes.

Ditto Brass Locomotive and Marine Boiler Tubes.

N.B.—These prices fluctuate with the metal market.



RAIN-WATER GUTTERS AND PIPES, SMOKE PIPES, &c.

Inches	3	31	4	41	5	6	Inches.
HALF-ROUND GUTTERS OF SPOUTS	0/71	0/73	0/8	0/101	1/0	1/6	per yard.
Ditto Elbows and T Pieces	0/10	1/01	1/2	1/3	1/6	1/10	each.
Ditto Nozzles	0/10	0/111	1/0₺	1/14	1/3	1/6	,,
O. G. GUTTERS	_	0/11	0/114	1/01	1/3	1/11	per yard.
Elbows and Nozzles		0/111	1/11	1/4	1/7	2/1	each.
Loose Plain Clips	_	0/51	0/51	0/5₺	0/7	0/7身	,,
Ditto Lion ditto	_	0/6å	0/61	0/64	0/8	0/81	,,
O. G. GUTTERS with Plain Clips							
cast on	_	. 1/0	1/0₺	1/11	1/5	2/0	per yard.
Elbows and Nozzles	_	1/1	1/1호	1/5	1/7	2/3	each.
O. G. GUTTERS with Lion Clips							
cast on		1/1	1/11	1/4	1/6	2/2	per yard.
Elbows and Nozzles		1/3	1/4	1/5	1/8	2/6	each.

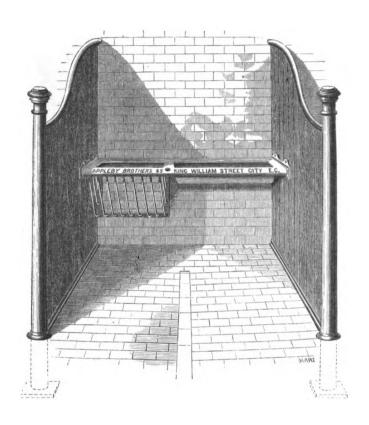
Loose Stop Ends, any size, at 3/0 per dozen. Bolts and Nuts at 5/0 per gross.

Moulded Gutters to any Section, made to order, on the shortest notice.

Inches	2	21	3	31	4	4 <u>L</u>	5	6	Inches.
RAIN-WATER PIPES	0/91	0/113	1/14	1/5	1/71	2/2	2/7	3/1	per yard.
Flat and Angle Heads	1/11	1/4	1/6	1/8	1/11	2/6	3/0	3/6	each.
Ditto, Large	1/7	1/8	1/9	2/4	2/11	4/0	4/8	6/0	,,
Shoes	0/91	0/101	0/113	1/14	1/6	1/9	2/3	2/10	,,
Boots	1/0	1/4	1/9	2/0	2/8	3/0	3/9	4/6	,,
Plinth Pipes	2/0	2/3	2/7	2/10	3/2	4/5	5/4	6/3	,,
Elbow, or Quarter Bends	1/2	1/4	1/6	1/11	2/3	2/7	3/1	3/9	,,
Swan Necks, 6-inch projection.	1/3	1/4	1/7	2/2	2/6	3/1	3/8	4/8	,,
Ditto, 9-inch ditto .	1/3	1/7	2/0	2/5	2/11	3/8	4/4	5/8	,,
Ditto, 12-inch ditto .	1/6	2/0	2/5	3/0	3/4	4/4	5/1	6/8	,,

Pipe Nails at 8d per dozen.

Inches	3	31/2	4		41	5	6	Inches.
STOVE or SMOKE-PIPES	1/4	1/10	1 '		/6	3/0	3/8	per yard.
Elbows for ditto	1/7	1/9	2/		/11	3/4	4/0	each.
Ditto, with Soot Doors	3/0	3/4	4/	0 4	/9	5/4	6/0	"
Inches	$2rac{1}{2} imes2rac{1}{2}$	3 × 3	4 × 4	3 × 2 ½	3 t × 3 t	4 × 3	5 × 4	Inches.
SQUARE and FLAT PIPES	2/5	3/1	4/8	2/11	3/7	4/0	5/4	per yard.
Ditto Heads	6/0	6/9	8/0	6/9	6/9	7/4	8/9	each.
Ditto Shoes Ditto Swan-necks and Plinths	2/8	3/0	3/4	3/0	3/0	3/4	3/9	,,
to order.								



STABLE FITTINGS. PLATE No. 1.

Improved Stable-Fittings, with extra long cast manger and wrought-iron hay-rack	ζ,	fitte	ed
to frame with halter rings.		•	
To fill opening 5 feet 10 inches. Painted per set \pounds	2	4	3
If with iron roller front, 10/0 extra.			
Appleby's Improved Brackets for ends of top plate per pair	0	2	6
Stall Posts plain; standing 5 feet 2 inches out of ground, and grooved for 14 inch			
boards each	0	15	2
Ramp Rail for ditto, 9 feet 6 inch projection ,,	0	11	4
Sill Rail for ditto ,,	0	7	0
Price of the set complete, with 2 Posts, Ramps, and Sills, £5 13 9.			

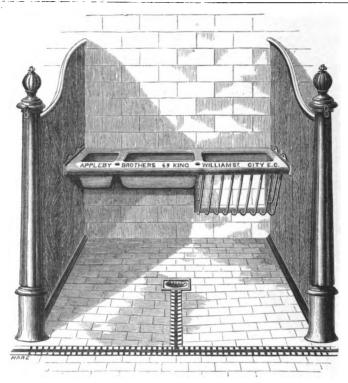


PLATE No. 2.

Improved Stable-Fittings, with cast manger and water-pan, wrought-iron hay-rack fitted to frame, with holes for halter or strap, in front edge of frame; to fill	
5 feet 101 inch opening. Painted per set £2 5	6
If with iron roller front, 10/0 extra. Valve to Water-pan 2/6 extra.	_
Appleby's Improved End Brackets (as No. 1) per pair 0 2	6
Stall Post and Cap, bold, reeded pattern, with ring; standing 8 feet 6 inches high out	Ū
of ground, grooved for 1\frac{3}{4} inch board each 1 2	0
•	
Ramp Rail, 9 feet 6 inches, projection to match, ditto ,, 0 9	6
Sill Rail ditto ditto 0 6	4
Price of the set complete, with 2 posts, ramps, and sills, £6 5s. $2d$.	
Drain Pipe, 31 inch diameter, roughed on the surface, in 6 feet lengths, 1/8 per foot.	
In shorter lengths, 2/0 per foot.	
Ditto T Pipe, 3½ inches diameter, 4/2 each.	
Improved Air Traps for drains for wall or ceiling-	
6 7 8 9 10 11 12 inches square.	
2/6 $3/9$ $5/1$ $6/4$ $8/3$ $10/9$ $13/4$ each.	
Ventilators with square frames for wall or ceiling—	
8 9 10 12 inches square.	
1/9 $2/6$ $3/0$ $3/7$ each.	
Ditto all sizes up to 30 inches made to order.	

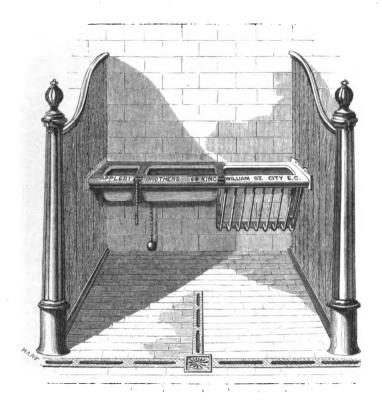
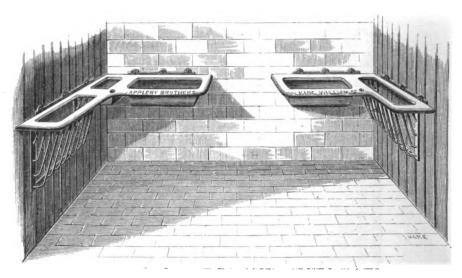


PLATE No. 3.

Improved Stable-Fittings, with extra bold moulded front; manger, water-pan, and													
wrought-iron rack fitted to frame, with halter rollers at front and back, the frame													
lipped all round inside; pro											13	0	
If with iron roller front,												·	
												c	
Appleby's Improved End Bracke	ets (as	NO. 1)					•	. ре	r pair	. 0	2		
Post, Ramp, and Sill Rails (as N	lo. 2)							. р	er set	1	18	7	
Price of the set co	MPLET	E, with	2 pos	ts, ran	nps, aı	nd sill:	s, £6	12	8.				
Drain Pipe, 4 × 2 inches with n	noveab	le cover.	in 6	feet le	engths.	. 2/1 r	er fo	ot.					
In lengths under 6 feet, @ 2/6 p						, -, - 1							
Drain Grates with Frames—		•											
;	8	10	12	inch:	square	·.							
2	/6	4/2		each.									
If with Sockets, extra.	,	-, -	0,0	• • • • • • • • • • • • • • • • • • • •									
Manger, Flat, 3 feet wide, lipped	l anda	flor of	and a	nd on	va and	nin-				£Ω	12	4	
Ditto Angle, 3 feet wide, lipped													
Ditto Flat, open, bold rounded f													
Ditto with frame and rings, lipp	ed all	round fo	r oper	ning 5	feet 1	01 inc	hes		.,	2	0	0	
Ditto ditto with division in													
5 feet 10½ inches											2	0	
Enamelling extra, according to si										_	_	•	
Hameling extra, according to si	26, 110	111 1 1 0 0 . U	11					•		^	17	^	
Hay-Rack, semicircular, 36 inche	es wide	, for hat	wan				• •	•		v		0	
Ditto angular, 33 inches across a	ngles							•		0	7	0	
A great Variety of Ornamenta	al Vent	tilators,	Stable	e and (Granai	ry Wi	ndow	s, an	d Sky	yligł	ıts.		

L



No. 5.

Single Swing Window, 39 × 20 inches

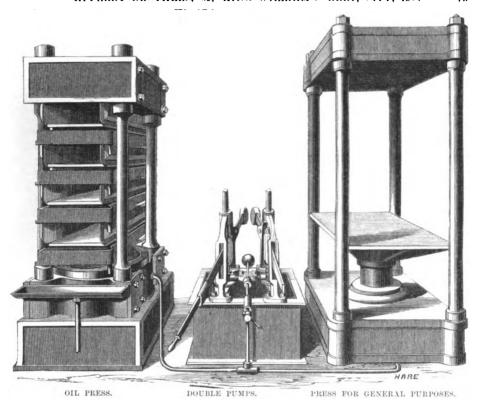
No. 4.

IMPROVED ANGLE FITTINGS FOR LOOSE BOXES.

No. 4. Cast-iron Manger, and strong Wrought-iron Hay-Rack fitted to angle Top Plate,			
with bold rounded front	£2	10	0
No. 5. Cast-iron Manger, Water Pan, and strong Wrought-iron Hay-Rack, fitted to			
angle Top Plate, with bold rounded front	2	17	6
Wall-side Brackets, extra per pair	0	5	0
Improved Valve to Water Pan, extra	0	2	6

CAST-IRON WINDOWS AND SKYLIGHTS.

CASI-INON WINDOWS AND SKILLOHID.																			
Cast-iron Skylights for Granaries, Malt Stores, &c. outside 26 × 21 inches, inside																			
14 × 12 inches										•						each	£0	14	6
Ditto ditto fitted	with stre	ng Wro	ugh	t-ir	on I	Leve	r l	Haı	ıdle	s, a	nd	Fr	icti	\mathbf{on}	Ro	ollers,			
outside 35 \times 27	inches, i	nside 24	×	18	incl	ıes										each	1	0	4
Double Swing Windo	ws 39 ×	39 inch	es													,,	1	0	3
Ditto		45 ,,																	
Ditto	29 ×	54 ,,	٠.													,,	1	18	0
Stable Window with	Slide Ver	ntilator,	39	× 2	20 ir	iche	S									,,	1	11	4
Ditto with Swing Ca	sement a	nd Slide	Ve	ntila	ator	39	×	39	incl	ies							1	5	4



HYDRAULIC PRESSES, WITH PUMPS COMPLETE. FOR COTTON, WOOL, HAY, OIL, &c.

Diameter of Ram.		eight between Tand Top when do			Size of Table,		e wi		ingle np.
4 in		2 ft 2 in.			2 ft. 4 in		24	0	Ò
6 in		3 ft. 6 in.			3 ft. 10 in	. 1	:54	0	0
10 in		4 ft. 0 in.	-		4 ft. 0 in	. 1	293	0	0 .
_	 		~		• • • • • •				

Double Pumps, £11 extra. Safety-valve and Stop-cock, 55s. extra. If fitted with Boxes for packing Cotton, Wool, &c. extra, according to size. Hydraulic Presses made, any size or for any purpose, to order.

IMPROVED DOUBLE-ACTION HAY-PRESS. TO PRESS THREE INTO ONE.

Whilst one bale of hay is being pressed ready for packing, the other end of the Press open to receive another truss; the handle is reversed, the hay pushed along to the other end, and a considerable saving of time is thus effected.

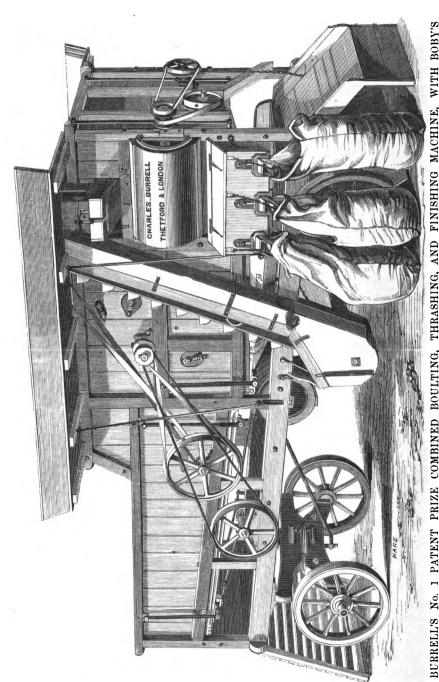
This may be worked by any motive power, as STEAM, HORSES, HYDRAULIC, &c.

The above is applicable for pressing Wool or Cotton in the Colonies or elsewhere.

PATENT MACHINES for CLEANING COTTON or WOOL ready for the press.

MACHINES for WASHING THE WOOL,





BURRELL'S NO. 1 PATENT PRIZE COMBINED BOULTING, THRASHING, AND FINISHING MACHINE, WITH BOBY'S PATENT RECIPROCATING SCREEN FOR SEPARATING THE THIN CORN FROM THE BEST, AND MAKING TWO SEPARATE SAMPLES. Price with Wood Wheels and Waterproof Cover, £120. Weight when packed for shipment, 70 cwt.; Measurement, 712 feet.

BURRELL'S No. 2 IMPROVED COMBINED PORTABLE THRASHING MACHINE,

With Barley Awner and Reciprocating Screen for finishing the Corn for Market, is similar in construction to that illustrated at page 76, and is fitted with an improved Reciprocating Screen. This Machine is frequently preferred to that previously described, on account of the difference in the first cost, as well as from its requiring less power to work it. In localities where the corn is of fair average quality, this Machine will finish the sample for market in a satisfactory manner; but where the harvest is late, and the corn uneven in quality, the No. 1 Machine will be found preferable.

	PRI	CE.										
Combined Thrashing Machi	ine, mounte	d on	W	000	l T	rav	elli	ng	W	hee	ls.	
with Reciprocating Scr	een											£110
Weight of Machine when pa	acked for sh	ipm	ent									68 cwt.
Measurement of ditto	ditto											686 ft.

BURRELL'S No. 3 PATENT PRIZE COMBINED BOULTING, THRASHING, AND DRESSING MACHINE,

Fitted with Straw Shaker, Riddle, Barley Awner, Winnowing Machine, Sacking Apparatus, and Sieves for taking out all the small seeds, is 4 feet 6 inches wide, and is fitted with Goucher's Patent Beaters, which thrash all kinds of grain without injury to the straw, so that the latter is delivered, straight and unbroken, for tying into bundles for the market. The Chaff, Pulse, and short Straws are each delivered in separate places, and the Corn into sacks. The Barley Awner can be used or not, as required, and the Corn only requires passing through an ordinary Dressing Machine to be ready for market, all the small seeds being taken out and delivered by a separate spout.

Price of the above, suital	ole for Engines of 6 to 8	-ho	rse	ю	w .e1	٠.		£100
Weight of Machine when	a packed for shipment							55 cwt.
Measurement of ditto	ditto							610 ft.

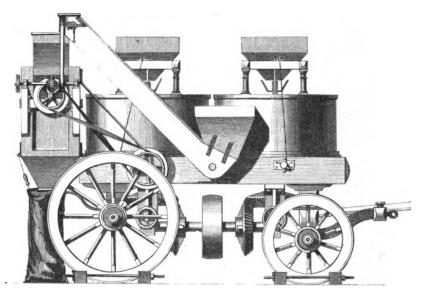
IMPROVED HORSE-POWER THRASHING MACHINE.

These Machines are specially designed for use in the Colonies, or on Farms where steam-power is not employed, and are so simple in arrangement that they may be fixed and worked by any labourer. The working parts are unusually strong, and are so arranged that they may be repaired at once without the aid of a skilled mechanic. The first motion wheel, instead of being east in one piece, is composed of a series of segments of teeth, which are formed into a wheel by being bolted upon a strong frame; so that in the event of accident, any one of these segments may be removed without disturbing the others, and the broken one replaced by a new one in a few minutes, and at a very small cost.

An improvement has recently been made in these Machines, whereby the power employed is greatly economized, and the work performed proportionately increased. When required for Colonial use, the wood-work employed is extra seasoned, and the travelling-wheels made extra-

broad and strong.

	Dia	RN-Wo	- Marrie					PRICE.	WEIGHT.	MEASUREMENT WHEN PACKED
	DAI	RN-W	JRKS.					£	Cwt.	Cubic feet.
Four-horse pow								22	10	146
Five-horse ditt								24	11	160
Six-horse ditt	o ditto,	with S	Straw Sh	wker and Four	W	hee	els	40	21	240
	Ho	RSE-W	ORKS.							
Four-horse power	er, with two	Carria	ige Whee	els and Axles				43	29	80
Five-horse ditt	o ditto)	ditto	ditto			:	46	32	84
Six-horse ditt	o ditto)	ditto	ditto				50	36	90



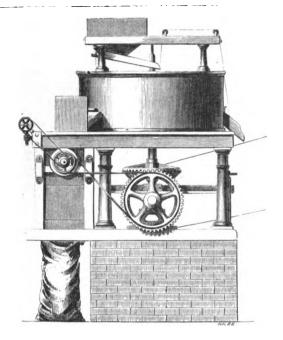
IMPROVED PORTABLE CORN MILL,
with two pairs of stones, and apparatus for dressing flour
for household use.

This Mill is specially adapted for use on large occupations, where steam or water power can be employed, as well as in the Colonies, or in thinly-populated districts, where "The Mill" is distant or difficult of access.

The stones are fixed upon a strong and well-seasoned timber platform. Vertical spindles, which are driven from below by the bevil wheels shown in the drawing, give motion to the top or runner-stones, and one of these wheels is geared with wood, so as to work noiselessly. The distance between the stones is regulated by a small hand-wheel, so that the Mill may be used for producing the finest flour, or for bruising or kibbling beans, peas, oats, &c. When required for the latter purpose, the Dressing Apparatus is detached, and the produce falls direct into the sacks. When used for producing fine flour, the meal falls into the hopper, and is thence carried to the Dressing Apparatus, where it is perfectly dressed and separated, fit for household use, and delivered into sacks.

When driven by an 8-horse power portable Steam-engine, or other equivalent power, this Mill will produce, with ϵ ase, 14 bushels (784 lbs.) of fine barley-meal, or 7 bushels (392 lbs.) of well-dressed flour per hour.

	PRICE.	WEIGHT.	MEASUREMENT WHEN PACKED.
Portable double Corn Mill, with French Burr Millstones, 3 ft. 6 in. diameter, mounted on Platform, and fitted	£	Cwt.	Feet.
with Carriage and strong Wood Wheels	130	80	290
The same as above, but with Flour Dressing Apparatus .	169	90	360



IMPROVED SINGLE CORN MILL, WITH FLOUR-DRESSING APPARATUS,

Is similar in principle to that described at page 78, but is more frequently used as a fixed Mill, although it can be easily moved from place to place, if desired. Where a large amount of work has to be done, two or more of these Mills may be put down side by side in any convenient building, each being worked by a strap from a line of shafting driven by a portable Steamengine, or by water-power. Like the Portable Double Mill, this Mill is made with or without Dressing Machinery attached, and is so constructed that it will make the finest dressed flour, or crush barley, peas, &c. as required.

PRICES.	PEAK STONES.	FRENCH BURR STONES.	WEIGHT.	MEASUREMENT WHEN PACKED.
Portable Mill, with Stones 3 feet diameter	£ 45	£ 50 •	Cwt. 30	Cubic feet.
Ditto ditto ditto with Flour-Dressing Machine		75	33	132
Portable Mill, with Stones 3 ft. 6 in. diameter.	55	60	36	120
with Flour-Dressing Machine	-	85	43	175
Portable Mill, with Stones 4 feet diameter	65	70	46	138
Ditto ditto ditto with Flour-Dressing Machine	_	95	52	190



IMPROVED PORTABLE CORN-GRINDING MILLS, with flour-dressing apparatus.

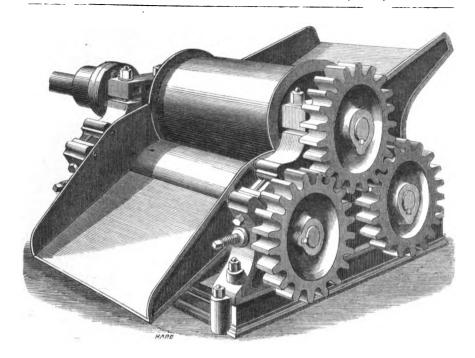
THESE Mills are in very general use for domestic purposes, and are simple and inexpensive. They are fitted with best French Burr Millstones, enclosed in iron casing, which may be easily removed when requisite for repairs. The Flour-Dressing Apparatus is constructed on the most simple plan consistent with thorough efficiency. They may be driven by hand or any other motive power.

Diameter of Stones.

1	4 inches,	for hand-power,	with Flour-Dressing App	aratus		£10	0	0
1	6	ditto	ditto			13	10	0
1	8 inches,	for steam-power,	without Flour-Dressing	Apparatu	ıs	14	0	0
2	0	ditto	ditto	•		16	0	0
2	2	ditto	ditto			20	0	0
2	4	ditto	ditto			24	0	0
. 2	7	ditto	ditto			, 30	0	0
3	0	ditto	ditto			36	0	0

Extra for Flour-Dressing Apparatus, from £10 to £25 For larger sizes, see pages 78, 79.





IMPROVED SUGAR-CANE CRUSHING MILLS.

THESE Mills are specially designed to supply a want much felt on large estates, where the distances are great between the "Mill" and the plantation; the object being to fix SEVERAL SMALL MILLS in convenient positions near to the sugar-canes, and to avoid the expense of removing the canes, &c. Many of these Mills are now in use, and are highly approved.

The Mill consists of a massive cast-iron bed-plate and framework for carrying the three iron rollers, which are each fitted on a wrought-iron shaft, with gun-metal bearings, and a strong pinion-wheel keyed on the end of each shaft to give motion to the whole; also feed-plate, trash-plate, spout, all necessary bolts, nuts, &c. &c. Size of Rollers 16 in. diam. by 20 in. long.

For Water or Steam-power (as shown). Price £100.

The above Mill, fitted with 6-Horse Power Horizontal Steam-Engine, Egg-end Steam Boiler, and all necessary fittings, connecting pipes, valves, cocks, intermediate gearing to reduce the speed of Mill 1 to 16 revolutions of engine, all shafts and bearings, ready for fixing, complete. Price £300.

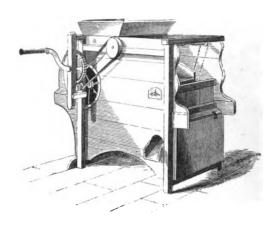
If fitted for horses or bullock power, with level wheels, upright shaft, footstep and top bearings, cast-iron cap to carry the levers, each lever fitted with draw-bows for horses or cattle rollers 14 inches diameter by 20 inches long. Price £95.

A smaller size Mill is made. Price £75.

SUGAR MILLS of larger sizes made to order.

CANE-TOP CUTTERS, No. 1, £7-No. 2, £10-No. 3, £14.

SUGAR MOULDS, FUNNELS, and all articles for the Sugar Trade.



THE REGISTERED CORN-DRESSING MACHINE

Is used for separating the corn from the chaff, as it comes from the ordinary Thrashing Machine; and it is also useful for finishing the corn for market, by separating the thin corn from the best. The equal delivery of the chaff before the blast is regulated by means of a spiked roller; and the Machine can be adjusted to suit corn, either in rough chaff or in any other state, by using the extra rollers supplied for that purpose. Price £13.

RICE-WINNOWING MACHINES	Price			
MAIZE-SHELLING MACHINES, complete	,,			
CANARY-SEED DRESSING and WINNOWING MACHINES	,,	· 15	0	0
PATENT CLOVER and TREFOIL SEED DRAWING and DRES-				
SING MACHINES		45	0	0

CHAFF-CUTTERS,—Richmond and Chandler's, Cornes's, Picksley's, Cockey's, Wood's, Bentall's, Gardner's, Samuelson's, Hunt and Pickering's.

ROLLER MILLS, FOR CRUSHING OATS, BARLEY, BEANS, PEAS, &c.—Bentall's, Turner's, Hunt and Pickering's.

ROOT PULPERS, CUTTERS, AND MINCERS,—Barnard and Bishop's, Bentall's, Gardner's, Wood's, Turner's, Phillips's.

OILCAKE BREAKERS, -Nicholson's, Bentall's.

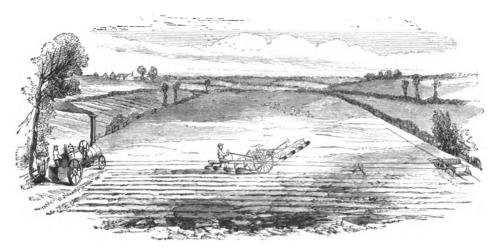
STABLE FITTINGS AND REQUISITES (see pages 71-74).

CARTS, WAGGONS, &c.—Crosskill's, Hancock's.

LIQUID MANURE CARTS, ASPHALTING MACHINES.



STEAM PLOUGHING AND CULTIVATING MACHINERY.



FOWLER'S PATENT STEAM-PLOUGH, SHOWING THE METHOD OF WORKING.

(Manufactured under Licence from the Patentee.)

These are made to be worked by 10, 12, or 14-horse power Engines.

Prices and particulars on application.

ANY OTHER PATENT STEAM-PLOUGHING MACHINERY SUPPLIED TO ORDER.

IRON OR WOOD PLOUGHS OF EVERY DESCRIPTION.

HOWARD'S, GARRETT'S, HORNSBY'S, GRAY'S, PAGE'S, or any other Maker.

HARROWS OF ALL KINDS.

PATENT CULTIVATORS, SCARIFIERS, AND HORSE HOES COLEMAN'S, GRAY'S, PAGE'S, &c.

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CORN AND SEED DRILLS.

BURRELL'S, HORNSBY'S, GARRETT'S, SMYTHE'S, GOWER AND SON'S, &C.

IRON HORSE RAKES.
Howard's, Nicholson's, Page's, &c.

CLOD CRUSHERS.

CAMBRIDGE'S, CROSSKILL'S, &C.

LAND ROLLERS.
Wood's, Nicholson's, Crosskill's, &c.

GARDEN ROLLERS, VARIOUS.

HAYMAKING MACHINES.

Nicholson's, Samuelson's, Ashby's, &c.

REAPING AND MOWING MACHINES.

Wood's, Burgess and Key's, Bamlett's, Dray's, Samuelson's, &c.

HAY RAKES AND FORKS, VARIOUS.

WOOD WHEELS AND AXLES.

CROSSKILL'S, or any other.

CATTLE, SHEEP, AND PIG TROUGHS, VARIOUS.

CORN AND HAY RICK STANDS, VARIOUS.

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BEST CAST-STEEL FILES, SAWS, AND TOOLS. MANUFACTURED BY JOHN KENYON & CO. SHEFFIELD. MARK ≚ KENYON.

FILES AND RASPS.

FLAT. ENTERING. MILL-SAW, and 4-square 9 inches and upwards.

· Inches.	١	_		_		_		_	_	_	.		l	ιí		l	.l	Ι.	_	İ	·		19	l	Inches	ا .
Rough and Bastard Cut Files	s. 6	d. 0	s. (d. 8	s. 5	d. 6	s. d. 6 8	s. 8	d. 0	8. d	1. s 9 1	. d. 119	s. d 13	9	s. d. 16 6	s. d 19-6	s. d	0 2	. d. 8 6	s. d 34 6	#. d. 41 (#. d. 48 0	8. d.	s. d 63 0	per do	z.
2d Cut Files and Gun Stocker's Rasps .)	1			- 1				1		ı	- 1		l	- 1		l	1	- 1		1	ł	1	1	1	1	- 1
Smooth and Cabinet Files	5	6	6	2	7	6	9 2	10	10	12	6 1	14 9	17	6	21 0	26 (30	0 3	6 0	44 0	54 (64 0	74 0	 85 0 	per do	z

All above 24 inches, 12/0 per inch extra. EXTRAS. Flat Files, double cut on the edge, as Hand Files. Tanged Rasps and Pin Files advance 3 inches.

HALF-ROUND, ROUND, 3-SQUARE, 4-SQUARE TO 8-INCH, HORSESHOE AND FLAT RASPS. FLAT WITH 1 ROUND EDGE, AND DOUBLE-CUT MILL-SAW FILES.

Inches.	1 to 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Inches.
	s. d.	s. d.	s. d.	s. d.	s, d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	
Rough and Bastard Cut Files	4 2	5 0	60	7 0	8 6	10 6	12 6	15 0	18 6	21 6	26 0	32 0	38 0	44 0	52 0	60 0	68 0	per doz.
2d Cut and 1-Round Gun Stocker's Rasps)		6 0	7 0	8 6	10 6	12 6	14 6	18 0	22 0	26 0	30 0	36 0	43 0	51 0	60 O	70 0	81 0	per doz.
Smooth Files and Cabinet Rasps	5 9	6 9	8 0	9 6	11 6	13 6	16 0	20 0	24 6	30 0	34 0	40 0	48 0	58 0	68 ₀	80 0	92 0	per doz.

EXTRAS. All above 24 inches, 13/0 per inch extra.

Horse Rasps, bevilled edges, 2/0 per dozen extra. 3-Square Rough and Middle Cut, 12-inch, 6d. per dozen; all above, 9d. per dozen extra to Bastard Cut.

Flat and High Backs, advance 1 inch.

Half-round and 3-square, cut on the edges as Hand Files.

Bellied 3-square, advance 1 inch.

HAND, PILLAR, NEEDLE ROUND-OFF, BONE FILES, POTTANCE, TOPPING, AND FLAT WITH 2 ROUND EDGES.

Inches.		4		5		3	1	7	8		1)	1	0	1	1	1	2	1	3	1	4	1	5	1	6	1	7	1	.8	1	9	2	0.0	In	ches.
	s.	d.	8.	\overline{d} .	s.	d.	8.																													
Rough and Bastard Cut Files)	4	4	5	0	6	8	8	0	9	9	11	9	13	9	16	6	19	6	23	0	28	6	34	6	41	0	48	0	55	0	63	0	72	0	per	doz
Second Cut	5	0	5	9	7	6	9	6	11	6	13	9	16	6	20	0	24	0	28	0	34	0	40	0	47	0	57	0	67	0	77	0	87	0	per	doz
Smooth	5	10	6	10	9	2	10	10	12	6	14	9	17	6	21	0	26	0	30	0	36	0	44	0	54	0	64	0	74	0	85	0	96	0	per	doz.

All above 24 inches, 12/0 per inch extra. EXTRAS.

Hand Files cut on both edges, also Hand Files with round edges as equalling Files.

Hand Files double cut on the edge, to advance 1/2-inch.

Round Off, with points, to advance 1 inch. Topping Files, with 2 round edges, advance 1½ inch.

Needle Files, exceeding breadth of Hand Files as equallings.

Equalling, Cant, Cross, Slotting, Tumbler, Riffler, Arch, Lock, Double-tanged and Blunt Mill-saw Files, Parallel and Cotter.

Inches.	31	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Inches.
	-		_		_	_	_	<u> </u>		·—		-	-	—			<u> — </u>		
Rough and	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	, s, d.	s. d.	s. d.	8. d.	s. d.	s. d.	s. d.	8. d.	1
Rough and Bastard	5 0	56	68	8 0	99	11 9	13 9	16 6	19 6	23 0	28 6	34 6	41 0	48 0	55 0	63 0	72 0	83 0	per doz.
Second Cut	5 9	6 2	7 6	9 6	11 в	13 9	16 6	20 0	24 0	28 0	34 0	40 0	47 0	57 0	67 0	77 0	87 0	98 0	per doz.
Smooth	6 10	76	9 2	10 10	12 6	14 9	17 6	21 0	26 0	30 0	36 0	44 0	54 0	64 0	74 0	85 0	96 0	107 0	per doz.

All above 22 inches, 12/0 per inch extra. Equalling, double cut on the edges, to be charged & inch extra.

Ditto with round edges, to be charged 1 inch extra.

If double cut, 1 inch extra.

Equalling and Cotter Files, extra thin, to advance 1 inch.

BEST REFINED CAST-STEEL SAW-FILES.

3-square, Taper 1 to 31 4 41 2D-cut, Single 3/4 3/9 4/3 4 5 5½· 6 71 8 81 3/4 3/9 4/3 4/9 5/4 6/6 7/9 8/6 9/6 10/6 11/6 12/6 per dozen. 2nd cut Frame Saw Single-) 4/0 4/4 4/10 5/6 6/6 7/6 8/6 9/6 10/9 12/0 13/3 14/6 cut, and Gulletting. 3 Square Blunt 2nd-cut, 4/3 4/9 5/4 6/6 7/9 8/6 9/6 10/6 11/6 12/6 14/6 16/6 and Taper Saw Files cut to Point

EXTRAS. Taper Saw Files, double-cut to 4 inches, 6d.; -41 to 6 inches, 9d. per dozen extra. All above 6 inches, 1/0 per dozen extra to single-cut prices.

Smooth Saw Files as Smooth Flat.

Frames, double-cut to 4 inches, 8d.;—4\frac{1}{2} to 6 inches, 1/0. All above, 1/3 per dozen extra to single-cut.

					14 in.	15 in.	16 in.	18 inches.	
Last-maker's	Rasps				35/0	41/0	52/0	70/0 per dozen.	
Saddle-tree R	asps				40/0	48/0	62/0	80/0 ditto	
Rubbers, Rou	gh and Bastar	d.					. 1/	/3 per lb.	
Ditto, Seco	nd-cut						. 1/	5 ditto	
Ditto, Smo	oth						. 1/	7 ditto	
Strong Flat I	Files, and half	thicks,	Rough	and	Basta	rd	. 1/	5 ditto	
Ditto	ditto	ditte)	Seco	nd-cut	;	. 1/	7 ditto	
Ditto	ditto	ditte)	Smo	oth		. 1/	9 ditto	
Ditto, half-round and three square, 1d. per lb. extra to Flat Files.									
~1 D 1	10 1 1	•							

Shoe Rasps, half-round ends, advance 1 inch on half-round price.

Fine Bastard and Round Rasps, as Second-cut Files.

Bread Rasps, handled, to 6 inch, 23/0 per dozen.

above 6 inch, 27/0ditto

Horse-mouth Rasps, 3/6 each.

Knife Files, to advance 3 inches on half-round price.

Feather Edges to advance 4 inches

Frame Equalling Saw Files, 3 inch on half-round price.

Single Improved Shoe Rasps, & inch on ditto.

Double 1 inch on ditto.

Round, Half-round, Three-square, and Square Files, if parallel to advance 2 inches on their respective descriptions.

All Dead Smooth Files, double the price of Smooth.

All 1-inches the price of the next size above.

Round, Half-round, and Cross Files, Double-cut Second-cut to advance & an neh. Ditto, Double-cut Smooth, to advance 1 inch.

SAWS.

PIT AND FRAME SAWS.

	5 ft.	51 ft.	6 ft.	61 ft. 7	7 ft. 7	٦å ft.	8 ft.	81 ft.	9 ft.	91 ft	. 10 fee	et.
Cast Steel, warranted	20/0	22/0	27/0	$29/0 \ 3$	32/0	38/0	42/0	48/0	58/0	66/0	76/0 ea	ch.
Cast Steel,	19/0	21/0	25/0	27/0 3	0/0	35/0	39/0	45/0	54/0	62/0	72/0 ,	,
German Steel	18/0	20/0	23/0	25/0 2	8/0	32/0	36/0	42/0	50/0	58/0	68/0	,,

Pit or Frame Saws exceeding 11 inch heel, to advance 1/6 per inch extra nett.

CROSS-CUT SAWS.

4 ft. 4½ ft. 5½ ft. 6½ ft. 6½ ft. 7 ft. 7½ ft. 8 ft. 8½ ft. 9 ft. 9½ ft. 10 feet.

Cast Steel, warranted, 14/0 16/0 19/0 20/0 24/0 26/0 28/0 34/0 42/0 48/0 58/0 66/0 76/0 each.

Cast Steel 13/0 15/0 18/0 19/0 22/0 24/0 26/0 31/0 39/0 45/0 54/0 62/0 72/0 ,,

German Steel 12/0 14/0 17/0 18/0 20/0 22/0 24/0 28/0 36/0 42/0 50/0 58/0 68/0 ,

CAST-STEEL STONE-SAWS.

5 ft. 5 lst. 6 ft. 6 lst. 7 ft. 7 lst. 8 feet.

Not exceeding 9 inches wide, 26/0 27/0 30/0 34/0 37/0 42/0 47/0 each.

If exceeding 9 inches wide, to be charged, 5 lsteet—2/0; and above 5 lsteet, 3/0 per inch extra, gross.

MILL-SAWS.

Mill Saws stronger than the eighth gauge, to be charged to $5\frac{1}{2}$ feet, 2/0; all above $5\frac{1}{4}$ feet, 3/0 per gauge extra, gross.

Cast-steel Mill Saws, hardened and tempered, and stronger than the tenth gauge, to be charged to $5\frac{1}{2}$ feet, 2/0; and above $5\frac{1}{2}$ feet, 3/0 per gauge extra, gross.

IMPROVED PATENT TURNED CAST-STEEL CIRCULAR SAWS, Warranted True.

34 in. 36 in. 38 in. 40 in. 42 in. 44 in. 46 in. 48 in. 50 in. 52 in. 54 in. 56 in. 58 in. 60 inches 106/0 120/0 145/0 160/0 180/0 215/0 240/0 270/0 380/0 420/0 480/0 570/0 620/0 680/0 each Strength,

12T II 11 11T 10E 10 9E 9 8E 8 7 6 5E 5 guage. Circular Saws stronger than the gauge named, the price advances proportionably.

HAND, PANEL, AND RIPPING SAWS.

Mahogany Handles, 4/0 per dozen extra nett. French-polished Handles, 4/0 per dozen extra nett. Polished Plates—to 26 inches, 30/0; to 28 inches, 34/0; to 30 inches, 40/0 per dozen extra nett. Fine-toothed Saws, 10 to 12 points, 2/0; above 12 points, 3/0 extra gross.

IRON AND BRASS BACK SAWS.

10 in. 12 in. 14 in. 16 in. 18 in. 20 in. 22 in. 24 inches. 115/0 132/0 145/0 160/0 180/0 200/0 per doz. 84/0 96/0 Warranted Spring Brass Backs, 114/0 125/0 140/0 160/0 175/0 72/0 84/0 96/0 Cast-steel Brass Backs Warranted Spring Iron Backs, 93/0 104/0 114/0 120/0 134/0 145/0 74/0 80/0 ,, Cast-steel, blued or bright Backs, 62/0 68/0 74/088/0 94/0 100/0 114/0 120/0 ,, German Steel, 56/0 62/0 68/0 80/0 86/0 92/0 106/0 112/0

German Steel Blue-backed Saws, 1/0 per dozen extra nett.

Mahogany Handles, to 12 inches, 2/6; and above 12 inches, 3/6 per dozen extra nett.

French-polished Handles, to 12 inches, 3/0; and above 12 inches, 4/0 per dozen extra nett.

CAST-STEEL COMPASS OR LOCK SAWS.

12 16 18 20 inches. 20/0 21/0 22/0 24/0 26/0 28/0 per dozen.

If set and sharpened to 14 inches, 2/6; above 14 inches, 3/0 per dozen extra nett.

IMPROVED CAST-STEEL WEBS FOR CUTTING IRON OR BRASS.

10 11 12 13 14 15 inches. 11/0 12/0 13/0 14/0 15/0 16/0 17/0 18/0 per dozen.

CAST-STEEL MILL-SAW WEBS, FOR CUTTING DEAL PLANKS AND TIMBER.

15 Gauge.						14 Ga	uge.			13 Gauge.				
Width,	3 f	4	41 ft.	wi	dth,	5	5 Ł	6 ft.				7	feet.	
4 inches,	9/6	11/0	12/0	6 i	nches	18/6	20/6	22/0	7 i	nches,	26/6	28/6	each.	
		11/6		6 <u>1</u>	,,	19/6	21/6	23/0	7 }	,,	28/0			
5 ,,	10/6	12/0	13/0	7	"	20/6	22/0	24/0	8	, ,,	29/6	31/0	,,	

If wider or stronger than the dimensions named, the price advances proportionably. All Saws of less dimensions than those in this list to be charged same price as the smallest

size named.

AUGERS, BRUZZES, TAP AND BUNG BORERS, GIMLETS, &c.

§ in. ½in. ½in. ½in. ½in. 1 in. 1½ in. 1½ in. 1½ in. 1½ in. 1 in. 1½ in. 1 in. 2 in. 2½ in. 2½ inches.

Carpenter's Shell Augers, 7/0 7/6 8/9 10/6 12/3 14/0 15/9 17/6 19/3 22/0 28/6 34/0 45/0 62/0 Ship Carpenter's Augers, 8/3 8/9 10/0 12/0 13/0 15/9 17 19/6 21/3 23/3 28/9 34/9Carpenter's Eyed Augers, with 12-inch shank, 10/6 10/6 12/6 14/6 17/0 20/0 23/0 26/0 29/0 32/0 Black Screw Augers, 10/3 10/3 12/3 14/3 16/6 18/9 21/0 23/3 25/6 27/9 36/0 40/0 32/339/3Bright Screw Augers, 13/6 13/6 15/3 17/6 19/9 22/0 25/0 27/0 30/0 32/0 39/0 48/0 Bright Scotch Screw Eyed Augers, 20/0 21/0 24/0 27/0 30/0 33/0 37/6 43/6 46/6 50/6 Best Bright Brace Screw Bits, 60/6 70/6 18/0 18/0 22/0 24/0 Taper Augers, 48/0 54/0 64/0 10/0 11/0 12/6 15/0 16/6 18/6 22/0 25/0 29/0 33/0 43/0

EDGE TOOLS OF EVERY DESCRIPTION.

LEATHER DRIVING BANDS.

Single Leather Bands.]	Double	Leather B	Patent Bands.						
	• /		8.	d.				8.	d.				8.	d.
2 in	ches wide.	per ft.	0	8	3 in	ches w	ide. per ft.	2	4	3 inc	ches wie	le per ft.	2	3
21	,,	٠,,	0	10	4	,,	٠,,	3	3	4	,,	`,,	3	1
3 ~	,,	,,	1	2	5	,,	,,	4	0	5	,,	,,	3	10
4	,,	,,	1	8	6	,,	,,	4	9	6	,,	,,	4	7
5	,,	,,	2	0	7	,,	,,	5	9	7	,,	,,	5	6
6	,,	,,	2	5	8	,,	,,	6	10.	8	,,	,,	6	4
	,,	• • •			10	,,	,,	8	8	10	,,	,,	8	5
					12	,,	,,	10	2	12	,,	,,	10	0
					Best L			er de	zen.		• • •	• •		

BEST NEWCASTLE GRINDSTONES.

WITH OR WITHOUT HOLES.

Diameter, inches	2	12 21 2/2	16 3	18 3	21 31 2/4	24 31 5/4	28 4 7/0	$\frac{32}{4\frac{1}{2}}$ $\frac{10}{6}$	$\frac{35}{4\frac{1}{4}}$ $\frac{12}{9}$	inches.
Price, each	1/4	2/0	2/6	3/0	3/4	5/4	1/0	10/0	12/9	eacn.
	Diameter.		es 39		12	48	56	inche	es.	
•	Thickness	,,	Ð	•	٥٩	1	ð	,,		
	Price esc	h	16/0	22	/0	40/0	54/0	each.		

STEEL. MARK \(KENYON.

		1	2	3		
Prices o	f					
Cast Steel for	Tools, Taps	, Dies, &c. 7 to 2	inch square '	63/	54/	46/
Ditto	ditto	ditto, 5 to 🖁	ditto	67/	58/	50/
Ditto	ditto	ditto, 1	ditto	71/	62/	
Ditto	ditto	ditto, 3	ditto		1	
Ditto	ditto	ditto, in Ingot	s			
No. 1 e	xtra quality	, per cwt. more th	nan No. 1.			
Cast Steel for	Spindles .			40/		
,, for	Piston Rods	, usual sizes		40/		
,, for	Slide Bars.			40/		
		Carriage Springs				
Double Shear	Steel, same	prices as Cast Steel				
Single Shear S	teel, per cw	t. less				
Smaller than	ı 💈 square,	or $\frac{3}{4} \times \frac{3}{8}$, extra				
squares of co	rresponding	•	ne same price as			
Oval and Octag						
Cast Steel, in s	heets, 1 to 2	0 WG not exceeding	g 18 inches wide.	65/	56/	44/
Ditto	21 to 23	,,	ditto.			
Thinner or wid		ve, extra				
Coach Spring S						
Sykes L Bar St	eel (blistere	d)		j		

N.B.—When ordering Steel, it is most important to specify the particular purpose for which it is required.

RAILWAY AND ENGINEER'S STORES, &c.

Railway Signals of every kind.

Materials (Ironwork) for the manufacture of ditto.

Railway Lamps-Carriage, Signal, Station, Guard's, Porter's, &c.

Weighing Machines.

Fire Engines.

Copying Presses.

Wrought-iron and Cast-iron Safes and Chests.

Galvanized Buckets or Pails.

Leather Fire Buckets. (See page 59.)

Luggage Hand Barrows.

Station and Signal Bells.

General Stores of every description.

STEEL AND IRON WIRE-ROPES,

BEST STEEL PLOUGH ROPES. (Round.)

 $\frac{3}{4}$ $\frac{7}{6}$ 1 $\frac{1}{8}$ $\frac{1}{6}$ 1 $\frac{1}{8}$ 1 $\frac{1}{2}$ 2 $\frac{1}{2}$ inches in circumference. At 85/6 81/6 75/6. per cwt.

These are made from Webster and Horsfall's best Patent Wire Guaranteed.

A commoner quality of wire @ 5/0 per cwt less.

STEEL ROPES (Flat).

IRON ROPES (Round).

$$\underbrace{1\frac{1}{4}, 1\frac{3}{8}, 1\frac{7}{8}}_{55/6}, \underbrace{2, 2\frac{1}{8}, 2\frac{1}{4}, 2\frac{3}{8}}_{51/0}, \underbrace{2\frac{1}{4}, 2\frac{5}{8}, 2\frac{3}{4}, 2\frac{7}{8}, 3\frac{7}{8}}_{46/0}, \underbrace{3\frac{1}{8}, 3\frac{3}{8}, 3\frac{1}{8}, 3\frac{3}{8}, 3\frac{3}{8}, 4\frac{4}{4}, 4\frac{1}{4}}_{per cwt.} \stackrel{\text{inches circum.}}{}$$

DITTO (Flat).

Guides for Pit Ropes. About 21, 21, 3, 31, 31, 32 inches circumference, 38/6 per cwt.

Iron Ropes if Galvanized 6/0 per cwt. extra.

Galvanized Strand Wire for Fencing, Signals, &c.

Seven Wires, No. 1, 27/0 No. 2, 23/0 No. 3, 30/0 No. 4, 18/0 per 100 yards.

Four Wires, No. 5, 15/0 No. 6, 12/0 No. 7, 10/0 per ,,

ELECTRIC TELEGRAPH WIRE.
Insulators, —Tools for fixing, &c.
Best Iron Wire, all sizes.
Best Charcoal, ditto ditto.
Best Galvanized, ditto ditto.
Bright or Annealed Wire, all sizes.
Half-round Iron Wire, ditto.
Iron Fencing Wire, Black.
Ditto ditto Galvanized.
If welded in long lengths, extra,

Cast-steel Wire.

Brass Wire, bright or annealed.

Copper Wire, ditto ditto.

Wire Fencing, various patterns, or made to order.

Strained Wire Fencing for all purposes.

Materials and Tools for erecting ditto.

WROUGHT-IRON HURDLES, all sizes and

GATES

ditto.

PATENT ASPHALTED FELT,

patterns.

Ditto

For roofing, or for lining damp walls, at 1d. per square foot, in long lengths 32 inches wide.

PATENT HAIR FELT,

For deadening sound between Partition Walls, or for clothing Steam Boilers, Cylinders, Pipes, Tanks, &c. to prevent loss of heat, or as a protection from frost. In Sheets, 34×20 inches.

							s.	d.
14	ounces					per sheet	0	6
16	,,				٠.	` ,,	0	7
24	,,					,,	0	9
32	,,					,,	0	11
40	,,					,,	1	1
48	,,					,,	1	3



WROUGHT NAILS.

Weighty, Clasp, or Rose. 6 in. 8 in. 10 in. 12 in. 20 in.

21/6 20/0 19/6 18/6 18/6 per cwt.

Floor Brads. 2 in. 21 in. 3 in. 31 in. 4 inch and upwards.

per cwt.

Countersunk, Clout, or Plate Nails. 1 in. 1½ in. 2 in. 2½ in. 3 in. 4 inch.

At per thousand.

CUT NAILS.

Cut Floor Brads (sheet). 2 inches and upwards, 13/0 per cwt.

Cut Clasp, Rose, and Clout. 1½ in. 2 in. 2½ in. 3 to 6 in. 7 inches.

16/3 15/0 14/6 13/9 15/0 per cwt.

Cut Lath. I in. 1 to 2 inches.

17/0 15/9 per cwt.

Wood Screws, all sizes.

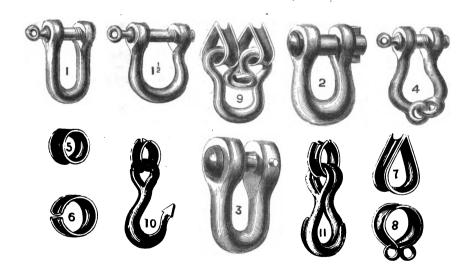
Stove Screws ditto.

Copper and Brass Screws, ditto

Coach ditto ditto. (See page 43.)

Bolts and Nuts. (See page 42).

Rivets, all kinds.



SHIPS' AND BLACK IRONMONGERY.

No. 1. Topsail Shackles, Screwed, Black. $\frac{6}{10}$ to $\frac{1}{2}$ inch @ $6\frac{1}{4}d$. per lb. $\frac{6}{10}$ inch and above $\frac{5}{6}d$.

```
No. 14. Small Screwed Shackles for Wire-rope Rigging,
                                                            5 in. gin. 7 in. linch.
                                           Black.
                                                             3/2
                                                                    3/9
                                                                          4/3
                                                                                5/7 per dozen.
                                           Galvanized,
                                                                4/6
                                                                      5/0
                                                          3/9
                                                                             6/9
         Anchor Shackles for Anchors, from & to 1& cwt.
                                                          2 to 5 cwt. 6 cwt. and above.
                                            47/0
                                                           35/0
                                                                      31/0 per cwt.
        Coupling Shackles for Cables, & and on in. and above.
    3.
                                            47/0
                                                       39/0
                                                                     33/6 per cwt.
        Jointed Shackles. 3 and 5 in.
                                              11 in. and above.
                              6¾d.
                                         61d. per lb.
   5 Welded Sail Thimbles, Black-
      1 in. 11 in. 12 in. 12 in. 2 iu. 21 in. 21 in. 22 in. 3 in. 31 in.
                                                                               3½ in. and above
                           6/8 8/11 10/7 12/3 13/11 15/7 18/4 per gross. 3d. per tb.
      4/0
            5/0
                    5/7
       Ditto, Galvanized-
      4/9
            5/10
                     6/8
                            8/4 10/7 12/3 14/3 16/2 18/4 21/9
                                                                                43d. ,,
       Double Sail Thimbles or Union Welded-
                             21 in.
                                     23 in.
                                             3 in.
                                                   31 inches diameter of larger Thimble.
                   Black
                             20/0
                                     23/6
                                            25/6 30/0 per gross pairs.
                                     33/6
                                            39/0 43/6
        Ditto, Galvanized.
                              27/9
         Open Thimbles.
                           No. 000
                                            00
                                                  0
                                                             2
                                                                              5 and upwards.
                              4\frac{3}{2}d. per lb. 40/0 35/0 31/6 29/6 25/6 24/6 22/3 per cwt.
        Oval Thimbles for Wire Rope Rigging-
                 Assorted sizes,—Black @ 31d. Galvanized, @ 41d. per lb.
         Cringles or Hanks, 11 to 2 in. 21 to 21 in. 21 to 31 in. 4 inches and above.
                 Black.
                                           5d.
                              51d.
                                                         4d.
                                                                   3\frac{3}{4}d. per lb.
                Galvanized. 63d.
                                          6 ld.
                                                         51d.
                                                                  43d. ,,
No. 9.
         Spectacle Clues, all sizes—Black, 35/0 per cwt. Galvanized, 45/6 per cwt.
 ,, 10.
         Tackle Hooks and Thimbles, common pattern-
             No. 000 00 0
                             No. 1
                                      No. 2
                                                        No. 4
                                                                 No. 5 and above
                                               No. 3
                     31/0
                                           23/3
                                                                 20/0
                                                                        per cwt.
         Ditto ditto, Government Pattern, solid eyes-
                            in. 1 in.
                      l in.
                                         11 in.
                                                 14 in. 13 in.
                                                                  2 inches.
                     62/3
                            44/0
                                  41/6 35/6
                                                  33/6
                                                          32/6
                                                                  31/6 per cwt.
         Clasp or Clip Hooks and Thimbles, \frac{5}{18} in. \frac{3}{8} and \frac{7}{18} in. \frac{1}{2} and \frac{9}{18} in.
                                                                                in. and above.
 ,, 11.
                                                                       3\frac{1}{2}d.
                                                                                3d. per lb.
                                            43d.
                                                         4d.
                              Dimensions, size of Iron of the eye.
          Bolt or Clink Rings, common,-
                                § in. § in. § in. § in. I in. 1 in. 1 in. 1 inches and above.
                                 46/8 37/4 32/8 27/6 25/0 23/9 21/3
                                                                         19/6 per cwt.
          Ditto, Cupped, Govern-
            ment Pattern-
                                         36/3
                                                    29/0
                                                               26/9
                                                                          24/6
          Marlin-spikes-
                 · 8
                       9
                             10
                                    11
                                           12
                                                 13
                                                        14
                                                               15
                                                                      16 inches.
                                  10/0
                                          11/3 12/3 13/6 14/6 15/6 per dozen.
           7/3
                 7/9 8/9
                            9/6
          Boat Hooks-
      No.
              1
                      2
                              3
                                              5
             3/6
                     4/0
                             4/3
                                     4/9
                                            5/3
                                                    6/3 per dozen; above, 4d. per lb.
          Monkey Tail Bolts-
            16 in.
                    18 in.
                            21 in.
                                   24 in.
                                           27 in.
                                                   30 in.
                                                           36 in.
                                                                  42 in.
                                                                          48 inches.
             19/0
                    19/6
                            20/0
                                    20/6
                                            21/6
                                                   22/6
                                                           23/6
                                                                   27/0
                                                                          30/0 per doz
                                                                   JOc
                                                        Digitized by
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Forelocks, single, 41d. per 1b.
                double, 11 to 3 inches long, 61d. per 1b.
                        31 to 6 inches long, 51d, per 16.
        Ditto.
     Ships Scrapers, short socket with wood handle, bright, 11/2 per dozen.
      Round Pail Bails, long or cross eared-
                                                            13 inches.
                11 in.
                          111 in.
                                      12 in.
                                                121 in.
                 2/10
                           2/10
                                      2/10
                                                 3/0
                                                           3/2 per dozen.
                         Light Flat Bails, all sizes, 1/7 per dozen.
Hinges, Cross Garnets, or Hooks and Hinges-
      O
                       2
                               3
                                                                      22 inches long.
      8 in
             10 in.
                     12 in.
                             14 in.
                                      15 in.
                                             17 in.
                                                     18 in.
                                                             20 in.
      2/7
              2/9
                      3/4
                               4/1
                                       4/11
                                              6/0
                                                      7/6
                                                              10/0
                                                                       12/0 per dozen pairs.
Weighty ditto, all sizes, 21/8 per cwt.
Hooks on plates and hinges, 14 to 16 inches, 26/9 per cwt.; 18 inches, 25/6 per cwt.
Weighty ditto, 18 to 20 inches 24/0 per cwt.; 21 inches and upwards, 23/4 per cwt.
                     No.
                              1
                                   2
                                         3
Hinges, Strap.
                            3/4
                                   3/8
                                        4/3
                                              5/3 6/3
                                                         8/0 10/3 per dozen pairs.
Ditto weighty, all sizes, 23/0 per cwt.
Ditto, quarter board-
       6 in.
                                            10 in.
                                                                 12 in.
                                                                         14 inches
                7 in.
                         8 in.
                                   9 in.
                                                      11 in.
        3/4
                3/11
                          4/6
                                   5/0
                                                                 7/6
                                                                        10/0 per dozen
                                             6/0
                                                        6/6
                         No.
                                             3
                                                         5
Ditto, water joint
                                  1
                                       2
                                3/11 4/2 5/0 5/10 6/8
                                                           7/9
Chain, short link. Ditto, best tested Crane. (See page 38).
Ladles, melting, Light-
No.
         0
                 1
                         2
                                 3
                                         4
                                                         в
                                                                 7
                                                                         8
                4/5
                       5/0
                               5/10
                                        6/8
                                                7/9
                                                        9/2
                                                                11/2
                                                                       12/10 per dozen.
Weighty ditto, eyed or socket, 5d. per lb.
Founders' Ladles, 51d. per lb.
Ladles, Cooks.
                    No.
                                        3
                           9/6 10/7 11/9 12/9 per dozen.
Seaming or Pitch Ladles.
                           No.
                                  1
                                 10/3
                                        11/6
                                                 12/6 per dozen.
Stoking Pans, up to 7 inches, @ 44d. per lb.; above 7 inches, @ 4d. per lb.
 Peal Plates, @ 4d. per lb.
 Socket Peals, @ 41d. per lb.
 Paring Shovels. No.
                                 2
                                         3
                                                  4
                        5/0
                                6/3
                                        8/4
                                                 11/8 per dozen.
      Rigging Screws-with wrought-iron pillars, turned bright square thread screw, and
```

12 in.

12/0

cast-iron clams.

10 in. 10/6



14 inches.

13/0 each.

- DERRICK CRANES FOR CONTRACTORS, RAILWAYS, QUARRIES, &c.; HYDRAULIC JACKS AND MACHINERY FOR LIFTING OR FORCING; COAL WHIPPING AND OTHER CRANES.
- WIND ENGINES FOR PUMPING, IRRIGATION, CORN GRINDING, &c.; FIXED MACHINERY FOR CORN MILLS, RICE, COFFEE, CHICORY, STARCH, AND MUSTARD MILLS.
 - MACHINERY FOR PAPER MAKING IN ALL ITS STAGES, BOTH FROM STRAW AND RAG.
- MACHINERY FOR PRINTING, PAPER CUTTING, RULING, PERFORATING, NUMBERING, PAGING, BINDING, TYPE CASTING, AND STEREOTYPING.
- DREDGING MACHINERY, WITH TUG-BOATS AND BARGES. STEAM TUGS FOR SHALLOW RIVERS, WITH PADDLES, OR WITH ONE OR TWO SCREW PROPELLERS.
 - MACHINERY FOR DYE WOOD CHIPPING AND GRINDING, TANNERIES, BREWERIES, DISTILLERIES, BREAD AND BISCUIT MAKING, ICE MAKING, ROPE SPINNING, &c.
- PATENT BLOWING FANS AND MACHINERY FOR IRON OR SMELTING WORKS, AND FOR EXHAUSTING THE AIR IN MINES, WELLS, &c.
- EDGE RUNNERS, HYDRAULIC AND GENERAL MACHINERY FOR LINSEED OIL AND CAKE, CASTOR OIL, COCOA NUT OR ANY OTHER OIL.
- VACUUM AND EVAPORATING PANS, CENTRIFUGAL MACHINES, TANKS AND OTHER MACHINERY FOR SUGAR MILLS AND REFINERIES.
 - PATENT STEAM AND HAND-POWER FIRE ENGINES OF ALL KINDS.
 - GIFFARD'S PATENT INJECTORS FOR FEEDING STEAM BOILERS.
 - DRAWINGS AND ESTIMATES FOR MACHINERY OF EVERY KIND.

CORRUGATED IRON ROOFS. HOUSES, WAREHOUSES, OR OTHER BUILDINGS. PATENT REVOLVING IRON SHUTTERS.

PATENT DIVING DRESSES AND APPARATUS.

CHURCH BELLS, OF BELL METAL OR STEEL.

FIRE-ARMS OF EVERY KIND, LIGHT AND HEAVY ORDNANCE, MOUNTED OR UNMOUNTED.

PATENT SHIPS' SHEATHING AND COPPER SHEATHING, GENERAL IRON WORK FOR SHIPS, BUOYS, BEACONS, &c.

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LIGHTNING CONDUCTORS.

NAUTICAL AND MATHEMATICAL INSTRUMENTS, &c. LANTERNS AND LAMPS FOR LIGHTHOUSES, BEACONS, OR SHIPS' USE.

KITCHEN RANGES, COOKING APPARATUS, REGISTER GRATES, HOT AIR AND HOT WATER STOVES AND APPARATUS.

EVERY DESCRIPTION OF IRONMONGERY, HARDWARE, GAS FITTINGS, CUTLERY, SILVER AND PLATED GOODS, &c. &c.

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A CONCISE TABLE for CALCULATING the VALUE of GOODS, SOLD BY THE HUNDREDWEIGHT AVOIRDUPOIS, FROM 1/0 TO 56/0 PER CWT.

				RATE.					
Per ton.	Per cwt.	2 qrs.	1 qr.	14 lbs.	7 lbs.	4 lbs.	3 lbs.	2 lbs.	1 lb
£ s. d.	8. d.	8. d.	s. d.	s. d.	s. d.	d.	d.	d.	d.
1 0 0	1 0	0 6	0 3	0 11/2	0 03	01	01		
1 10 0	16	0 9	0 41	0 21	0 1	01	01	01	
2 0 0	2 0	1 0	0 6	0 3	0 11/2	02	01	01	
2 6 8	2 4	1 2	0 7	0 31	0 13	1	02	0}	01
2 10 0	2 6	1 3	0 71	0 34	0 13	1	0월	01	01
3 0 0	8 0	16	0 9	0 41	0 21	11	02	01	01
3 10 0	3 6	1 9	0 101	0 51	0 21/2	11/2	1	02	01
4 0 0	4 0	2 0	1 0	0 6	0 3	11	11	02	01
4 10 0	4 6	2 3	1 11	0 63	0 31	12	11	02	01
4 13 4	4 8	2 4	1 2	0 7	0 31	2	11	1	01
5 0 0	5 0	2 6	1 3	0 71	0 34	2	11	1	01
5 10 0	5 6	2 9	1 4	0 81	0 4	21	15	1	01
6 0 0	6 0	3 0	1 6	0 9	0 41	$2\frac{1}{2}$	13	11	01
6 10 0	6 6	3 3	1 71	0 94	0 43	23	2	11	01
7 0 0	7 0	3 6	1 9	0 101	0 51	8	21	11	07
7 10 0	7 6	3 9	1 101	0 111	0 51	3	21	11	02
8 0 0	8 0	4 0	2 0	1 0	0 6	81	21	11	03
8 10 0	8 6	4 3	2 11	1 02	0 61	81	21	13	03
9 0 0	9 0	4 6	2 3	1 14	0 63	83	23	13	02
968	9 4	4 8	2 4	1 2	0 7	4	8	2	1
9 10 0	9 6	4 9	2 41	1 21	0 7	4	8	2	1
10 0 0	10 0	5 0	2 6	1 3	0 71	41	3	2	1
10 10 0	10 6	5 8	2 71	1 37	0 74	41	81	21	1
11 0 0	11 0	5 6	2 9	1 41	0 81	41	31	21	1
11 10 0	11 6	5 9	2 101	1 51	0 81	42	31	21	1
11 13 4	11 8	5 10	2 11	1 51	0 82	5	33	21	11
12 0 0	12 0	6 0	3 0	1 6	0 9	5	32	21	11
12 10 0	12 6	6 3	3 11	1 63	0 91	51	-4	21	11
12 10 0	13 0	6 6	3 3	1 71	0 92	51	4	23	11
13 0 0 13 10 0	13 6	6 9	3 44	1 81	0 10	53	41	23	11
13 10 0	14 0	7 0	3 6	1 9	0 10	6	44	3	11
14 0 0 14 10 0	14 6	7 3	3 71	1 93	0 103	6	41	8	11
14 10 0 15 0 0	15 0	7 6	3 9	1 101	0 111	61	42	3	11
15 0 0 15 10 0	15 6	7 9	8 104	1 111	0 111	61	43	31	11
15 10 0 16 0 0	16 0	8 0	4 0	2 0	1 0	62	5	8 <u>1</u>	11
16 6 8	16 4	8 2	4 1	2 0	1 01	7	51	31	17
	16 6	8 3	4 11	2 03	1 01	7	51	31	17
16 10 0	17 0	8 6	4 3	2 11	1 02	71	51	3 <u>1</u>	12
17 0 0	17 6	8 9	4 41	2 21	1 1	71	51	3 2	17
17 10 0	18 0	90	4 6	2 2 2 3	1 11	71	53	3 3	12
18 0 0		9 3	4 71	2 3 2	1 13	72	52	32	17
18 10 0	18 6	9 4	4 12	2 37	1 17	8	6	4	2
18 13 4	18 8		4 8	1	1 2	8	6	4	2
19 0 0	1 5	9 6				l .		1	2
19 10 0	19 6	9 9	4 101	2 51	1 21/2	81	61	4	z

A CONCISE TABLE FOR CALCULATING THE VALUE OF GOODS, -continued.

				RATE					
Per ton.	Per cwt.	2 qrs.	1 qr.	- 14 lbs.	7 lbs.	4 lbs.	3 lbs.	2 lbs.	1 16.
£ s. d.	£ s. d.	£ s. d.	8. d.	s. d.	s. d.	s. d.	s. d.	s. d.	d.
20 0 0	100	0 10 0	5 0	2 6	1 3	0 84	0 64	0 41	2
21 0 0	1 1 0	0 10 6	5 8	2 71	1 3	0 9	0 61	0 44	21
22 0 0	1 2 0	0 11 0	5 6	2 9	1 44	0 91	0 7	0 4	21
23 0 0	1 3 0	0 11 6	5 9	2 10½	1 51	0 94	0 71	0 43	21
23 6 8	1 3 4	0 11 8	5 10	2 11	1 5	0 10	0 74	0 5	24
24 0 0	1 4 0	0 12 0	6 0	3 0	1 6	0 101	0 71	0 5	21
25 0 0	1 5 0	0 12 6	6 3	3 11	1 67	0 101	0 8	0 51	21
25 13 4	1 5 8	0 12 10	6 5	3 21	1 71	0 11	0 81	0 51	24
26 0 0	1 6 0	0 13 0	6 6	3 3	1 7	0 11	0 81	0 5	24
27 0 0	170	0 13 6	6 9	3 44	1 81	0 114	0.81	0 53	24
28 0 0	1 8 0	0 14 0	7 0	3 6	1 9	1 0	0.9	0 6	8
29 0 0	190	0 14 6	7 3	3 71	1 9	1 01	0 9}	0 6	3
30 0 0	1 10 0	0 15 0	7 6	3 9	1 101	1 04	0 94	0 61	3
30 6 8	1 10 4	0 15 2	7 7	3 91	1 103	1 1	0 9	0 61	31
31 0 0	1 11 0	0 15 6	7 9	3 101	1 111	1 11	0 9	0 €	31
32 0 0	1 12 0	0 16 0	8 0	4 0	2 0	1 1	0 101	0 63	31
32 13 4	1 12 8	0 16 4	8 2	4 1	2 01	1 2	0 10	0 7	34
33 0 0	1 13 0	0 16 6	8 3	4 11	2 03	1 2	0 104	0 7	31
34 0 0	1 14 0	0 17 0	8 6	4 3	2 11	1 21	0 103	0 71	31
35 0 0	1 15 0	0 17 6	8 9	4 44	2 21	1 3	0 111	0 71	33
36 0 0	1 16 0	0 18 0	9 0	4 6	2 3	1 3}	0 111	0 71	34
37 0 0	1 17 0	0 18 6	9 3	4 73	2 33	1 34	0 113	0 73	34
37 6 8	1 17 4	0 18 8	9 4	4 8	2 4	1 4	10	0 8	4
38 0 0	1 18 0	0 19 0	96	4 9	2 41	1 41	1 0	0 8	4
39 0 0	1 19 0	0 19 6	9 9	4 101	2 51	1 41	1 01	0 81	4
39 13 4	1 19 8	0 19 10	9 11	4 113	2 54	1 5	1 04	0 81	41
40 0 0	2 0 0	1 0 0	10 0	5 0	2 6	1 5	1 03	0 81	41
41 0 0	2 1 0	1 0 6	10 3	5 1}	2 63	1 51	1 1	0 83	41
42 0 0	2 2 0	1 1 0	10 6	5 3	$2 7\frac{1}{2}$	16	1 1}	0 9	41
44 6 8	2 4 4	1 2 2	11 1	5 6]	2 91	17	1 21	0 9}	43
45 0 0	2 5 0	1 2 6	11 3	5 71	2 93	1 71	1 21	0 91	41
46 13 4	2 6 8	1 3 4	11 8	5 10	2 11	1 8	1 3	0 10	5
49 0 0	290	1 4 6	12 8	6 11	3 03	19	1 34	0 101	51
51 6 8	2 11 4	1 5 8	12 10	6 5	3 21	1 10	1 4	0 11	$5\frac{1}{2}$
53 13 4	2 13 8	1 6 10	13 5	6 83	3 41	1 11	1 51	0 111	54
56 0 0	2 16 0	1 8 0	14 0	7 0	3 6	2 0	1 6	1 0	6

Note.—If higher rates are required, refer to the column showing the HALF of required rate and double it: thus—required the rate per cwt. at 9d. per lb.;—refer to $4\frac{1}{2}d$. lb or £2 2s. per cwt. \times 2 = £4 4s. per cwt. or 9d. per lb.

PROFIT AND DISCOUNT TABLES,

To CALCULATE FROM £1 to 6d. AND FROM 21 to 75 PER CENT.

Rate per Cent.	Cost.		Nett Cost.	Return.	Rate per Cent.	Cos	t.		ett st.	Retu	ırıı.	Rate. per Cent	Соя	it.	N Co	ett st.	Retu	ırn.
	£ s.	d.	s. d.	£ s. d.		£ s.	ď.	s .	d.	£ s.	d.		£ s.	 d.	s.	d.	£ s.	d.
21	10	0	19 6	1 0 61	15	10	0	17	0	1 3	61	271	10	0	14	6	1 7	7
	10	0	9 9	10 3		10	0	8	6	11	91		10	0	7	3	13	9
	5 (0	4 10½	5 1½		5	0	4	3	5	101		5	0	3	$7\frac{1}{2}$	6	10
	4 (0	3 103	4 13	il	4	0	3	44	4	81		4	0		10 3	5	6
	3 (0	2 11	3 1		3	0	2	$6\frac{1}{2}$	3	61		3	0	2	2	4	14
	2 (0	1 111	2 01	1	2	0	1	81	2	41		2	0	1	$5\frac{1}{2}$	2	9
	1 4	0	0 113	1 01		1	0	1	10 1	1	2		1	0	0	83	1	4
	0	6	0 54	0 61		0	6	0	5	0	7		0	6	0	41	0	8
5	10	0	19 0	1 1 03	171	1 0	0	16	6	1 4	3	30	1 0	0	14	0	1 8	6
	10	0	96	10 64		10	0	8	3	12	17		10	0	7	0	14	3
	1	0	4 9	5 31	I	5	0	4	11/2	6	03		5	0	3	6	7	1
	-	0	3 91	4 21		4	0	3	31	1	101		4	0	2	91	5	8
	i	0	2 101	3 2		3	0	2	54	3	72		3	0	2	11	4	3
	i	0	1 10}	2 14	1	2	0	1	74	2	5		2	0	1	42	ı	10
	1	0	0 111	1 03		1	0	_	10	1	21		1	0	0	81	1	5
	0	6	0 53	0 61		0	6	0	5	0	71		0	6	0	41	0	8
71	İ	0	18 6	1 1 71	20	1 0	0	16	0	1 5	0	321	1 0	0	13	6	1 9	7
	ì	0	9 3	10 93		10	0	8	0	12	6		10	0	6	9	14	9
	1	0	4 73	5 43		5	0	4	0	6	3		5	0	3	41	7	5
	1	0	3 8}	4 4		4	0	3	21/2	5	0		4	0	2	81	1	11
	1	0	2 91	3 3	li	3	0	2	43	3	9		3	0	2	01	4	5
	1	0	1 10}	2 2		2	0	1	71	2	6		2	0	1 0	41	1	11,
	1	0 6	0 11 0 5	1 1 0 6½	,	0	0 6	0	9 <u>월</u> 4월	0	3 71		0	6	0	8 4	0	5 9
	<u> </u>	_				<u> </u>		<u> </u>		<u> </u>			1 0	_	13		1 10	0
10	ı	0	18 0	1 2 23	221	1 0	0	15	6	1 5	103	331	10	0	6	4 8	1 10	0
	i	0	9 0	11 11		10	0	3	9	12	107		5	0	3	4	7	6
	1	0	4 6 3 7 1	5 63 5 41	1	4	0	3	10½ 1½	5	5⅓ 2		4	0	2	8	6	0
	l .	0	2 81	3 4		3	0	2	4	l	101		3	0	2	0	4	6
	l .	0	1 91	2 23	11	2	0	1	6 1	2	7		2	0	1	4	3	0
	1	0	0 103	1 11	II	1	0	0	91	1	3 1		ī	0	0	8	1	6
	1	6	0 51	0 63		0	6	0	43	0	73		0	6	0	4	0	9
121	1 0	0	17 6	1 2 10}	25	1 0	0	15	0	1 6	8	35	1 0	0	13	0	1 10	9
~-3	1	0	8 9	11 51	1	10	0	7	6	13	4		10	0	6	6	15	4
		0	4 41	. 5 81		5	0	3	9	6	8		5	0	3	3	7	8
	1	0	3 6	4 63		4	0	3	0	5	4		4	0	2	71	6	1
	1	0	2 71	3 5}	[3	0	2	3	4	0		3	0	1	111	4	7
	1	0	1 9	2 31		2.	0	1	6	2	8		2	0	1	31	3	1
	1	0	0 10½	1 13		1	0	0	9	1	4		1	0	0	73	1	6
	0	в	0 51	0 63	11	0	6	0	41	0	8	il	0	6	0	4	0	Ð

PROFIT AND DISCOUNT TABLE, -continued.

Rate per Cent.		Co	st.	N Cc	ett st.	I	Reti	urn.	Rate per Cent.	۱ (Cor	st.		ett ost.]	Ret	urn.	Rate per Cent.	Con	st.		ett st.	1	Reti	urn.
	£	8.	d.	8.	d.	£	8.	d.		£		d.	s.	d.	£	8.	d.		£ s.	d.	8.	d.	2	8.	d.
371	1	0	0	12	6	1	12	0	471	1	0	0	10	6	1	18	11	65	1 0	0	7	0	2	17	13
	:	10	0	6	3	ľ	16	0	ļ!	1	0	0	5	3		19	01	ı	10	0	3	6	1	8	63
	l	5	0	3	11		8	0	li		5	0	2	71		9	61	l	5	0	1	9		14	31
	l	4	0	2	6		6	43			4	0	2	11		7	$7\frac{1}{2}$		4	0	1	43		11	51
		3	0	1	101		4	91			3	0	1	7	1	5	81		3	0	1	01		8	63
	ļ	2	0	1	3		3	$2\frac{1}{2}$	il		2	0	1	$0\frac{1}{2}$		3	94		2	0	0	81		5	81
		1	0	0	71		1	71			1	0	0	61	ŀ	1	10	1	1	0	0	41	ĺ	2	10‡
		0	6	0	34		0	9 1			0	6	0	31		0	111		0	6	0	2		1	51
40	1	0	0	12	0	1	13	4	50	1	0	0	10	0	2	0	0	70	1 0	0	6	0	3	в	8
	:	10	0	6	0		16	8		1	0	0	5	0	1	0	0		10	0	3	0	1	13	4
		5	0	3	0		8	4			5	0	2	6	•	10	0		5	0	1	6	l	16	8
		4	0	2	45		6	8			4	0	2	0		8	0		4	0	1	$2\frac{1}{3}$		13	4
		3	0	1	91		5	0		1	3	0	1	6		6	0 -		. 3	0	0	103		10	0
		2	0	1	$2\frac{1}{2}$		3	4			2	0	1	0	l	4	0		2	0	0	71		6	8
		1	0	0	71	İ	1	8			1	0	0	6]	2	0		1	0	0	3		8	4
		0	6	0	31		0	10			0	6	0	3		1	0		0	6	0	13		1	8
421	1	0	0	11	6	1	14	9 1	55	1	0	0	9	0	2	4	51	75	1 0	0	5	0	4	0	0
	:	10	0	5	9	1	17	44		1	0	0	4	6	1	2	23		10	0	2	6	2	0	0
		5	0	2	10½		8	81		l	5	0	2	3		11	11		5	0	1	8	1	0	0
		4	0	2	31		в	111			4	0	1	$9\frac{1}{2}$		8	103		4	0	1	0		16	0
		3	0	1	83	İ	5	$2\frac{1}{2}$			3	0	1	41		6	8		3	0	0	9		12	0
		2	0	1	12		3	53			2	0	0	103		4	51		2	0	0	6		8	0
		1	0	0	7		1	83			1	0	0	$5\frac{1}{2}$		2	23		1	0	0	3		4	0
		0	6	0	3 <u>1</u>		0	10]			0	6	0	23		1	11		0	6	0	11		2	0
45	1	0	0	11	0	1	16	41	60	1	0	0	8	0	2	10	0								
]	l0	0	5	6		18	21		1	0	0	4	0	1	5	0								
		5	0	2	9		9	1			5	0	2	0		12	6								
		4	0	2	$2\frac{1}{2}$		7	31			4	0	1	71		10	0								
		3	0	1	73		5	$5\frac{1}{2}$			3	0	1	$2\frac{1}{2}$		7	6								
		2	0	1	11		3	74			2	0	0	$9\frac{1}{2}$		5	0								
		1	0	0	$6\frac{1}{2}$		1	93			1	0	0	4		2	6								
		0	6	0	31		0	11			0	6	0	$2\frac{1}{2}$		1	3								

Rules.—To find the NETT cost of Invoice Prices:—thus, at 4/0 per dozen, subject to 20 per cent. discount; refer to Table 20 per cent. and opposite 4/0 in the "Cost" column will be found 3/21, the nett

discount; refer to Table 20 per cent. and opposite 4/0 in the "Cost" column win be found 3/25, the net cost price per dozen.

To add the required 25 per cent. and opposite 10/0 in the "Cost" column will be found 13/4 in the "Return" column. For proof, if 25 per cent be deducted from 13/4, it will leave 10s., the invoice price.

To reduce selling price to cost: suppose an article sold at 3/4 had 10 per cent. "return" added, what was the cost? Refer to 10 per cent. and opposite 3/4 in the "Return" column, will be found 3/0 in the "Cost" column.

CAST-IRON PIPES, HOLLOW COLUMNS, OR CYLINDERS. WEIGHT PER LINEAL FOOT.

Diameter of Bore.	l inch Thick.	å inch Thick.	inch Thick.	å inch Thick.	inch Thick.	inch Thick.	1 inch Thick.	11 inch Thick.	11 inches Thick.
in.	1bs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
1	3.06	5.06	7:36	9.97	12.89	16-11	19.63		
11	3·68	5.98	8.59	11.51	14.78	18.25	22.09		
11	4.29	6.3	9.82	13.04	16.56	20.4	24.54		
12	4.91	7.83	11:05	14.57	18:41	22.55	27.		1
2	5.53	8.75	12.25	16:11	20.25	24.7	29.45	-	}
21	6.14	9.66	13 5	17:64	22.09	26.84	31·85		1
21	6.74	10.58	14.72	19:17	23.92	28.93	84.36		
23	7:36	11.5	15.95	20.7	25.71	31·14	36-81		
3	7.98	12.43	17:18	22.19	27.62	83.29	39.25	45.56	52.20
31	8.59	13:34	18:35	23.78	29.45	85.44	41.72	48.32	55.22
31	9.2	14*21	19.64	25:31	31.8	37·58	44.18	51·08	58-29
32	9.76	15.19	20.86	26 85	33-13	39.73	46.63	53.84	61.36
4	10 44	16.11	22 1	28 38	34.98	41.88	49.00	56·61	64.25
41	11.1	17.08	23 · 37	29.97	36.87	44.08	51 ·6	59.42	67.45
41/2	11.66	17.94	24.54	31 .44	38-65	46.17	58.99	62.12	70.56
43	12.27	18.87	25.77	32.98	40.5	48.32	56.45	64.89	73.63
5	12.88	19:78	27.	34.51	42.25	50.46	58· 9	67:64	76-25
51	13.5	20.71	28 ·23	36.05	44.18	52.62	61.36	70.41	79.77
5]	14.11	21.63	29.45	37.58	46.02	54.76	63.81	73·17	82.84
53	14.73	22.55	30.68	39.12	47.86	56.91	66.27	75.94	85 91
6	15 [.] 34	23.47	31.90	40.65	49.50	59.06	68.50	78.7	89.0
7	17.79	27.15	36.80	46.79	56.84	67.65	78.50	89.74	101.25
8	20.02	30.83	41.70	52.92	64.42	76.23	88.25	100.78	114.0
9	22.71	34.52	46.50	59-07	71.50	84.84	98.20	111.84	126.0
10	25.16	38.2	51 50	65*2	79.16	93.42	108	122.87	138.00
11	27.62	41.88	56.25	71.33	86.20	102.01	117.50	133.92	150.30
12	30.06	45.55	61.	77.46	93.6	110.6	127.25	144 96	163
14				90.6	109.6	129•	148.8	168.7	189
16					124.5	146.4	168.6	181.0	213.8
18					139.4	163.7	188.4	213.3	238.5
20						181·1	208.2	235.6	263 · 3
24					182*		247.9	280.2	312-9
28					213		286		360
30					227		305		384
34					257		345		443

WEIGHTS, OF 9 FEET LENGTH, OF FLANGED CAST-IRON PIPES OF VARIOUS DIAMETERS.

Diam. of Bore.	Thickness of Metal.	Diam. of Flange.	Thickness of Flange.	Diam. of Circ. through Holes.	Diam. of Holes,	Number of Holes.	W	eigh	Ŀ.
Inches.	Inches.	Inches.	Inches.	Inches.	Inches.		Cwt.	qr.	lbs.
2	8	61		41	ŧ	4	0	3	0
3	3	71		6	ŧ	4	1	0	3
4	ė i	91	1	72	ŧ	4	1	3	5
5	ģ	10]	3	83	ł	4	2	1	12
6	8	12	1	10	i	4	3	2	1
7	4	14	1	112	ŧ	6	4	3	17
8	1	15	• 1	121	1	6	5	2	9
9	1	161	1,4	14}	1	6	6	1	12
- 10	1	171	11	151	1	6	7	0	0
11	3	19	1,	167	1	6	8	3	24
12	3	20	11	172	11	6	9	3	5
13	3	21	11	184	11	6	10	2	0
14	3	22	11	193	11	8	11	0	26
15	7	23	11	203	11	8	12	0	25
16	3	$24\frac{1}{2}$	1,5	22	11	8	12	3	8
17	3	25}	1,5	23	11	8	18	2	17
18	1	26]	13	24	11	8	16	1	15
19	1.	28	18	25	1	8	17	2	13
20	1	29	12	26	13	8	18	0	26

BALLS.—CAST-IRON, BRASS, COPPER, AND LEAD.

Diam.	Cast Iron.	Brass.	Copper.	Lead.	Diam	Cast Iron.	Brass.	Copper.	Lead.	Diam.	Cast Iron.	Brass.	Copper.	Lead.
inch.	lbs. •136	lbs. ·158	lbs. •166	lbs. •214	inch. 5	lbs. 17:04	lbs. 10·9	lbs. 20·8	lbs. 26·9	inch.	lbs. 99 4	lbs. 115·9	lbs. 121·3	lbs. 156·7
11	*46	•537	·56	•727	5]	22.68	26.47	27.74	36.0	91	116-9	136.4	143.0	184.7
2	1.09	1.25	1.3	1.7	6	29.45	34.3	35.9	46.4	10	136:35	159.0	166-4	215.0
21	2.13	2.50	2.60	3.35	61	37.44	43.67	45.76	59.13	101	157.84	184.0	193.0	250.0
3	3.68	4.3	4.5	5.8	7	46.76	54.5	57· 1	73.7	11	181.48	211.8	221.8	286.7
31	5.84	6.82	7.14	9.23	71	57.52	67 · 11	70.0	90.0	111	207:37	242.0	253.5	327.7
4	8.72	10.2	10.7	13.8	8	69-81	81.4	85.2	110.1	12	235-62	275.0	288-1	372.3
41	12.42	14.2	15.25	19.6	81	83.73	100.0	102.3	132.3					

CAST-IRON PLATES.

WEIGHT OF A SUPERFICIAL FOOT, FROM 1 TO 2 INCHES THICK.

Inch 1	3 8	3	Á	3	78	1	11	11	13	11/2	15	13	1 2	2
Weight in Pounds 9.37	14.06	18:75	23.43	28.12	32-81	37.50	42 18	46.87	51·56	56.25	60 93	65.62	70.31	75.

WEIGHT OF MATERIALS.

MALLEABLE BAR IRON .- Weight of a Lineal Foot.

Size inches	4	15	3 8	7.	1	10	8	11	4
SQUARE Rolled Bars . lbs.	·208	.325	·468	.638	.833	1.05	1.30	1.57	1.87
Round do "	·163	.255	.368	•501	·65 4	.82	02	1.23	1.47
Size inches	13	1	15	1	175	11	13	11	1,4
Square Rolled Bars . lbs.	2.20	2.55	2 92	3.33	3 76	4.21	4.70	5.20	5.74
Round do. ,,	1.72	2 0	2.30	2.61	2.95	3.31	3.69	4 .39	4.51
Size inches	18	1,7,6	11	1%	18	173	13	1+3	17
Square Rolled Bars . lbs.	6.30	6.88	7.50	8.15	8.80	9.50	10.20	10.69	11.71
Round do. ,,	4.95	5.40	5.89	6.40	6.91	7.46	8.01	8.60	9.20
Size inches	115	2	21	21	23	21/2	25	23	21
Square Rolled Bars . lbs.	12.52	13 33	15.05	16.87	18.80	20.80	22.96	25.20	27.55
Round do. ,,	9.83	10.47	11.82	13.25	14.76	16.36	18.03	19.79	21.63
Size inches	3	31	31	38	31	35	33	37	4
Square Rolled Bars , lbs.	30.	32.55	35.20	37.98	40.80	43.80	46.87	50.05	53.33
Round do. ,,	23.56	25.56	27.65	29.82	32.07	34.40	36.81	39.31	41.88
Size inches	41	41	48	41	48	43	42	5	6
Square Rolled Bars . 1bs.	56.71	60.20	63.80	67.50	71.30	75.20	79.21	83.33	121
Round do. ,,	44.54	47.28	50.11	53.01	56.	59.06	62.21	65.45	95.03

FLAT ROLLED IRON.—Weight of a Lineal Foot.

Width of Iron.	in. Thick.	្សើ in. Thick.	∄ in. Thick.	√a in. Thick	in. Thick.	ን in. Thick.	∯in. Thick.	}} in. Thick.	∄ in. Thick.	}∄ in. Thick.	∦in. Thick.	† in. Thick.	1 in. Thick.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
1	.833	1.04	1.25	1.45	1.66	1.87	2.08	2.29	2.50	2.70	2.91	3.12	3.33
11	937	1.17	1.40	1.64	1.87	2.10	2.34	2.57	2.81	3.04	3.28	3.21	3.75
11	1.04	1:30	1.26	1.82	2.08	2.34	2.60	2 86	3.12	3.38	3.64	3.90	4.16
18	1.14	1.43	1.71	2.	2.29	2.57	2.86	3.15	3 43	3.72	4.01	4.29	4.58
11	1.25	1.56	1.87	2.18	2.50	2.81	3.12	3.43	3.75	4.06	4.37	4.68	5.
18	1.35	1.69	2.03	2.36	2.70	3.04	3.38	3.72	4.06	4 40 .	4.73	5.07	5.41
13	1.45	1.82	2.18	2.55	2.91	3.28	3.64	4.01	4.37	4.73	5.10	5.46	5.83
17	1.56	1.95	2.34	2.73	3.12	3.21	3.90	4 29	4.68	5.07	5.46	5.85	6.25
2	1.66	2.08	2.50	2.91	3.33	3.75	4.16	4.58	5.	5.41	5.83	6.25	6.66
21	1.77	2.21	2.65	3.09	3.54	3.98	4.42	4.86	5.31	5.75	6.19	6.64	7.08
21	1.87	2.34	2.81	3.28	3.75	4 21	4.68	5.12	5.62	6.09	6.26	7.03	7.50
28	1.97	2.47	2.96	3.46	3.95	4.45	4.94	5.44	5.93	6.43	6.92	7.42	7.91
21	2.08	2.60	3.12	3.64	4.16	4.68	5.20	5.72	6.25	6.77	7.29	7 81	8.83
25	2.18	2.73	3.28	3.82	4.37	4.92	5.46	6.01	6.56	7.10	7.65	8.20	8.75
23	2.29	2 86	3.43	4.01	4.58	5.15	5.72	6.30	6.87	7.44	8.02	8.59	9.16
27	2.39	2.99	3.29	4.19	4.79	5.39	5.98	6.28	7.18	7.78	8.38	8 98	9.58
3	2.20	3.12	3.75	4.37	5.	5.62	6.25	6.87	7.50	8.12	8.75	9 37	10.

To ascertain the Weights of larger sizes, take the half size of that required, and double it. Thus, required the weight of 4 by 1 in.; refer to 2 by 1 in. = $6.66 \times 2 = 13.32$ lbs.

PLATE OR SHEET IRON, BRASS, COPPER, AND LEAD. WEIGHT OF A SUPERFICIAL FOOT IN POUNDS AVOIRDUPOIS.

			-		Т	HICK	NESS	IN PA	RTS (F AN	INCE	I.		
Inc	h		16	18	3 16	14	516	38	716	1/2	58	34	78	1
Iron in lbs.			2.5	5.	7:5	10.	12.5	15.	17.5	20.	25.	30.	35.	40.
Brass ,,			2.7	5.2	8.2	10.9	13.6	16.3	19.	21.8	27.1	32.5	37.9	43.3
Copper "			2.9	5.8	8.7	11.6	14.5	17:4	20.3	23.2	28.9	34.7	40.4	46.2
Lead "	, .		3.7	7.4	11.1	14.8	18.5	22.2	25.9	29.6	37.	44.4	57.8	59.2
1	TI	HICKN	ESS B	Ү ТН	E BIR	MING	HAM	WIRE-	GAUG	E, ANI	O IN I	ECIM	ALS.	
Wire-gauge, No.	0000.	000.	00.	0.	1	2	3	4	.5	6	7	8	9	10
Thickness in decimals of an inch	·454	425	-380	340	.300	-284	-259	-238	-220	-203	·180	·165	·148	·134
Iron in lbs.	18.99	17.78	15.89	14.22	12.5	12.	11.	10.	8.74	8.12	7.5	6.86	6.24	5.62
Brass ,,	21.11	19.76	17:67	15.81	13.75	13.2	12.1	11.	9.61	8.93	8.25	7.54	6.86	6.18
Copper "	21.61	20.53	18:37	16.43	14.5	13.9	12.75	11 6	10.1	9.4	8.7	7.9	7.2	6.5
	TI	HICKN	ESS E	ВҮ ТН	E BIF	RMING	HAM	WIRE-	GAUG	E, AN	D IN I	DECIM	ALS.	
Wire-gauge, No.	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Thickness in decimals of an inch	·120	*109	.095	•083	.072	.065	058	.049	.042	035	.032	•028	.025	.022
Iron in lbs.	5.	4.38	3 75	3.12	2.82	2.5	2 18	1.86	1.7	1:54	1.4	1.25	1.12	1.
Brass ,,	5.5	4.81	4.12	3.43	3.1	2.75	2.4	2.04	1.87	1.69	1.54	1.37	1.23	1.1
Copper "	5.8	5.08	4.34	3.6	3.27	2.9	2 52	2.15	1.97	1.78	1.62	1.45	1.3	1.16

HOOP IRON.

WEIGHT OF TEN LINEAL FEET.

Width in Inches and Parts	ş	3	쿻	1	11	11	18	11	13	2
No. of Gauge	21	20	19	18	17	16	15	14	13	12
Weight in lbs. and Decimal Parts	·685	-885	1.24	1.60	2.05	2.73	3.40	3.72	4.72	6.06

The weight o	f Bar Iron b	eing 1:	The
The weight o	f Cast Iron	= .95	The '
,,	Steel	== 1.02	
,,	Copper	= 1.16	
,,	Brass	= 1.09	
,,	Lead	= 1.48	

The weight of Cast Iron being 1:—
The weight of Bar Iron = 1 07
, Steel = 1 08
, Brass = 1 16
, Copper = 1 11
, Lead = 1 56



TAPER ANGLE IRON, OF EQUAL SIDES.

Length of Sides in Inches.	Thickness of Edges.	Thickness of Root.	Weight of One Lineal Foot in lbs. and Decimal Parts.
Inches.	Inches.	Inches.	
4 3 2 3	7-16ths	9-16ths	14·0 10·375 8·25
21	5-16ths full	7-16ths 5-16ths full	6·5 5·0 3·875
13 14	bare	5-16ths 5-16ths 5-16ths bare	3·25 2·625

PARALLEL ANGLE IRON OF EQUAL SIDES.

Length of Sides in Inches.	Uniform Thickness Throughout.	Weight of One Lineal Foot in lbs. and Decimal Parts.
Inches.	Inches.	
3 2 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 leths 1 full 1 ful	8·0 7·0 5·75 4·5 8·75 8·75 1·5 1·5 1·25 1·0 875 625 568

TAPER T IRON.

Width of Top Table in Inches.	Total Depth in Inches.	Thickness of Top Table at Root.	Thickness of Top Tables at Edges.	Uniform Thick- ness of Rib.	Weight of One Lineal Foot in lbs. and Decimal Parts.
Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
3	31 24	7-16ths	3	7-16ths	8.0
2	3	7-16ths	5-16ths	5-16ths	8·0 5·25
$\frac{2\frac{1}{2}}{2}$	$\frac{21}{14}$	ទី g full	5-16ths	j full	6 5 3 5
2	1 1	5-16ths	ł	i i	2.875

PARALLEL T IRON, OF EQUAL DEPTH AND WIDTH.

Width of Top Table and Total Depth.	Uniform Thickness Throughout.	Weight of One Lineal Foot in lbs. and Decimal Parts		
Inches.	Inches.			
6	1			
5	7-16ths	13.75		
4	3	9.75		
31/2	ä	8.5		
3	1	7.5		
21/2	5-16ths	4.625		
21	5-16ths	4.5		
2	5-16ths	3.75		
13	}	3.0		
14	+	2.25		
11		1.75		
1	3-16ths	1.0		
1	j.	.725		
*	i i	625		

TABLES OF THE DIAMETER AND CIRCUMFERENCE OF ANGLE IRON HOOPS—WITH ANGLES INSIDE AND OUTSIDE.

From 6 Inches to 6 Feet Diameter.

Diameter.	Angle, Outward Cir- cumference.	Angle, Inward Cir- cumference.	Diameter.	Angle, Outward Cir- cumference.	Angle, Inward Cir- cumference.	Diameter.	Angle, Outward Cir- cumference.	Angle, Inward Cir- cumference.
ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
0 6	1 51	1 81	1 9	5 1½	5 117	3 0	8 91	10 3 1
0 7	1 81	1 117	1 10	5 43	6 31	3 3	9 61	11 11
0 8	1 118	2 33	1 11	5 7 3	6 63	3 6	10 3	11 113
0 9	2 23	2 63	2 0	5 10 1	6 101	3 9	10 117	12 10
0 10	2 51	2 101	2 1	6 11	7 1 §	4 0	11 84	13 8
0 11	2 8	3 14	2 2	6 41	7 5	4 3	12 51	14 64
1 0	2 111	3 5	2 3	6 71	7 83	4 6	13 21	15 4 8
1 1	3 2	3 81	2 4	6 10	7 113	4 9	13 11	16 3}
1 2	3 5	3 11%	2 5	7 1	8 31	5 0	14 77	17 11
1 3	3 77	4 3	2 6	7 87	8 64	5 3	15 4 8	17 117
1 4	3 107	4 67	2 7	7 67	8 10 1	5 6	16 13	18 10
1 5	4 17	4 101	2 8	7 91	9 11/2	5 9	16 101	19 8}
1 6	4 42	5 1 §	2 9	8 03	9 5	6 0	17 7	20 61
1 7	4 75	5 5	2 10	8 34	9 83			1
18	4 10 8	5 8½	2 11	8 61	9 117			

Note.—In the Table of Angle Outwards, the breadth or thickness of the Angle Iron must be added to the circumference; thus,—suppose you require to form a ring of 2 inch Angle Iron, 1 ft. 6 in. inside diameter—add 2 in. to the diameter = 1 ft. 8, and you will find the circumference or length of Iron to be 4 ft. 10g.

In the Table of Angle Inwards, the above rule is reversed, and the breadth or thickness of Iron must be subtracted from the outside diameter; thus,—required a ring of 3 in. Angle Iron 2 ft. outside diameter, subtract 3 in. from the diameter = 1 ft. 9, and you will find the circumference or length of Iron to be 5 ft. 117 in.

COMPARATIVE WEIGHT AND STRENGTH OF ROPES AND CHAIN CABLES.

Size of Chain. Diam. of iron.	Weight per Fathom.	Size of Rope. Circum.	Proof Strain.	Weight of Anchor.	Register of Vessel.	Size of Chain. Diam. of iron.	Weight per Fathom.	Size of Rope. Circum.	Proof Strain.	Weight of Anchor.	Register of Vessel.
Inches.	Pounds.	Inches.	Per Ton	Cwt.	Tons.	In hes.	Pounds.	Inches.	Per Ton.	Cwt.	Tons.
15	6	21	2			1	58	103	17	8	150
3	83	31	11			11,	64	111	19	91	180
16	11	4	21/2			11	72	12	211	11	210
1/2	15	43	31/2	2	20	136	80	123	24	121	240
9 1 ਚੱ	18	5 1	41/2	21/2	30	11	90	131	27	14	280
8	24	61	6	3	40	1,5	98	141	30	15]	320
13	28	7	71/2	31	50	13	110	15	33	17	360
3	32	73	9	4	60	176	115	151	36	18}	400
13	38	81	11	41	75	11	125	16	40	20	450
7	44	91	13	5 1	95	15	145	171	48	25	550
15	52	10	15	61	120	13	170	181	56	30	700

IRON WIRE ROPES.—SIZE, WEIGHT, BREAKING STRAIN, &c.

As	STATED	BY	MESSRS.	NEWALL,	AND	Co.

	ROU	ND.		FLAT.								
Girth in Inches.	Weight per Fathom in lbs.	Working Breaking Load Strain in Cwts. in Tons.		Load Strain		per Fathom Load Strain		Size in inches.	Weight per fathom in lbs.	Working Load in Cwts.	Breaking Strain in Tons,	
1	1	6	2			-						
11/2	1}	9	3	21×1	9	36	16					
13	21	15	5				1					
2	31	21	7	2⅓ × ⅓	10	40	18					
21	41	27	9	23 × 1	121	50	221					
$2\frac{1}{2}$	51	33	11	24 ^ 8	122							
24	61	39	13	3 × 1	15	60	27					
3	73	45	15									
31	81	51	17	33 × §	18	72	32					
31	10	60	20	4 × §	20	80	86					
33	12	72	24	7 ^ 8	20	00	""					
4	14	84	28	4½ × §	221	90	40					
41	15	90	30									
43	16	96	32	5 X 🖁	25	100	45					
45	18	108	36		1	ļ						

DIMENSIONS OF CYLINDRICAL COLUMNS OF CAST-IRON TO SUSTAIN A GIVEN LOAD WITH SAFETY.

Diameter		Height in feet.										
in inches.	4	6	8	10	12	14	16	18	20	22	24	
2 3	72 178	60 163	49 145	40 128	32 111	26 97	22 84	18 73	15 64	13 56	11 49] =
4 5	326 522	310 501	288 479	266 452	242 427	220 394	198 365	178 337	160 310	144 285	130 262	Weight cwts.
. 8	607 1333	592 1315	573 1289	550 1259	525 1224	497 1185	469 1142	440 1097	413 1052	386 1005	360 959	هُ ﴿ ا

N.B.—If the columns are hollow, the area to the given diameter is to be converted into the ring, or the difference of the outer and inner diameters multiplied by §, because hollow cast-iron columns are stronger than solid ones in that proportion.

SIZES OF DRAWING PAPERS.

Demy									hes.
Medium		٠				$22\frac{1}{2} \times 17$,,	Double Elephant 40 × 27 ,,	,
Royal	•			٠	•	$24 \times 19\frac{1}{3}$,,	Wove Antique 52 × 27 ,	,
Super-royal							,,	Antiquarian 53 × 31 ,,	
Imperial .							,,	Extra ditto 56 × 38 ,,	,
Elephant .							"	Emperor	,
Colombier .			٠			34 🗙 23	,,	1	

TABLES OF WEIGHTS AND MEASURES USED IN MERCANTILE TRANSACTIONS, &c.

MEASURES OF LENGTH

12 inches	MILINGO	RES OF BENGIN.
8 furlongs, 1760 yards, or 5,280 feet = 1 mile. 1 $\frac{1}{14}$, = 1 Scotch mile. 3 miles = 1 league, marked lea. 1 $\frac{1}{14}$, = 1 Irish mile.	3 feet = 1 yard 5½ yards = 1 pole	or rod. $3\frac{1}{4}$, = 1 Dutch mile. = 1 Italian mile.
3 miles = 1 league, marked lea. $1\frac{1}{14}$, = 1 Irish mile. 22 , = 1 French league. $69\frac{1}{18}$, nearly . = 1 degree, marked 0	8 furlongs, 1760 yards, or $5,280$ feet = 1 mile.	1_{1} , = 1 Scotch mile.
23 ,, = 1 French league. 69_{15} ,, nearly = 1 degree, marked °.	3 miles = 1 league, mark	$\text{ked lea.} \qquad 1_{11}^{4} , \qquad \qquad \dots \qquad = 1 \text{ Irish mile.}$
	23 ,, = 1 French leagues = 1 Spanish leagues	1e. $69\frac{1}{15}$,, nearly = 1 degree, marked °.

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VARIOUS FRENCH MEASURES IN COMMON USE.

A point	is equal	to 0148025	English inches.
A line	,,	.088815	"
A millimetre	,,	.039371	,,
A centimetre	**	*39371	**
An inch (pouce)	"	1.06578	,,
A decimetre	,,	3.9371	,,
A foot	,,	12.78933	"
A metre	"	89.371	,, or 3 2809 English feet.
A toise (fathom)	,,	6.394	English feet.
A league	,,	14591 · 1	or 4863 7 English yards.
A square inch	,,	1·13582 I	English square inches.
A cubic inch	,,	1 21063	English cubic inches.
▲ cubic metre	,,	85·316 I	English cubic feet.

MEASURES OF SURFACE, OR SQUARE MEASURE.

144	square	inches																_	1 sq	uare	foot.
9	,,	feet		٠.														=	1	,,	yard.
80	. ,,	yards																=	1	,,	pole.
40	,,	poles								,								=	1	,,	rood.
4	"	roods,	or	10	s q	uai	e e	ha	ins,	01	48	340	8q	uai	e y	ar	ds	=	1	,,	acre.
		acres																			
1089	Scotch	,,									,			,		,		_	1369	Eng	glish acres.

MEASURES OF SOLIDITY, OR CUBIC MEASURE.

1728 cubic inches	= 1 cubic foot.	64000 cubic poles	= 1 cubic furlong.
27 ,, feet	= 1 ,, yard.	512 ,, furlongs	= 1 ,, mile.
1662 yards	= 1 pole.		

MEASURES OF CAPACITY.

FOR ALL LIQUIDS AND ALL DRY GOODS, EXCEPT THOSE IN NEXT TABLE.

```
8.665 cubic inches
                              = \frac{5}{16} lbs. of water = 1 gill.
         = 34.659 cubic inches = 11 ,,
4 gills
                                                 = 1 pint.
2 pints
                       ,, = 2½
          = 69.318
                                                  = 1 quart.
                                         ,,
4 quarts = 2771
                              = 10
                                                 = 1 gallon.
2 gallons = 5541
                              = 20
                                                 = 1 peck.
                       ,,
4 pecks
        = 2218<del>1</del>
                             = 80
                                                 = 1 bushel.
8 bushels =
               101 cubic feet
                                                  = 1 quarter.
                                                  = 1 load.
5 quarters =
               511
```

A bushel of wheat is on average 60 lbs.; barley, 47 to 50 lbs.; oats, 38 to 40 lbs.

A load of hay or straw, 36 trusses.

A truss of straw is 36 lbs. weight; old hay, 56 lbs.; new hay (until 1st September), 60 lbs.

A hogshead of wine, about 52½ gallons; a puncheon, 70; a pipe, 105 gallons,

IMPERIAL MEASURES OF CAPACITY.

FOR POTATOES, FRUIT, AND OTHER GOODS.

```
2 Gallons = 1 Peck = 704 cubic inches nearly.
8 ,, = 1 Bushel = 2815½ ,,
3 Bushels = 1 Sack = 5 cubic feet nearly.
12 Sacks = 1 Chaldron = 58% ,,
```

The imperial gallon is exactly 10 lbs. avoirdupois of pure water; the pint 11 lb.; and the bushel 80 lbs.



MEASURES OF WEIGHT-TROY.

USED FOR PRECIOUS METALS.

4 grains (marked gr.)	=	1 carat	(marked	car.)
24 ,,	=	1 pennyweight	,,,	dwt.
20 pennyweights	=	1 ounce	,,	OZ.
12 ounces	==	1 pound	,,	lb.

AVOIRDUPOIS.

USED IN ALL MERCANTILE TRANSACTIONS, AND IN THE COMMON DEALINGS OF LIFE.

•	DEDITORITIES E MILLIONIO			,		
	27.34375 troy grains	=	1	dram	(marked	dr.)
	16 drams	=	1	ounce	"	oz.
	16 ounces	_	1	pound	,,	lb.
	14 pounds	=	1	stone	,,	st.
	2 stones, or 28 pounds	=	1	quarter	"	qr.
	4 quarters, or 112 pounds	=	1	hundredweig	ght ,,	cwt.
	20 hundredweights	=	1	ton	••	T. or ton.

MISCELLANEOUS SPECIAL BRITISH MEASURES.

to lineal feet = 1 fathom. 100 square feet = 1 square of flooring.	
100 square feet = 1 square of flooring.	
272 , at 14 inches in thickness = 1 rod of brickwork.	
600 , of 1 inch boards = 1 load.	
40 cubic feet of round timber 50 ,, of hewn timber 3 = 1 ton or load.	
40 ,, = 1 ton of shipping.	
500 bricks = 1 load.	
32 bushels of lime = 1 ,,	
36 , of sand = 1 ,,	
22 cwt = 1 fodder of lead (Stockton).	
21 ,, = 1 ,, (Newcastle).	
$19\frac{1}{2}$,	
86 bushels, or 28 cwt = 1 chaldron of coals (London).	
53 ewt	
88 lbs = 1 bushel of coal.	
56 ,	
1 gallon of sea water = 10.32 lbs. avoirdupois.	
1 ,, oil = 9.32 ,,	
1 ,, proof spirits = 9.8	

The old ale gallon contained 282 cubic inches; and the old wine gallon 231.

The French litre, or standard measure of capacity for liquids, contains 61 028 cubic inches, or about 453 of the imperial gallon.

WEIGHT OF WATER.

Maximum density of water at 42° Fahrenheit.

Freezing point 32° Fahrenheit, at which point it has expanded 17th of its original bulk.

62·5 l	bs. avoirdupois	== th	e weight of	1 cubic foot of water	r = 61 imperial gallons.
•036	317 ,,	=	,,	1 cubic inch of wat	er.
·434	١,,	=	,,	1 lineal foot 1 inch	square.
49.1	,,	=	,,	l cylindrical foot	= about 5 imperial gallons.
•028	342 ,,	_	,,	1 cylindrical inch.	Samoun.
•341	٠,,	=	,,	1 lineal foot 1 inch	diameter.
11.2	imperial gallons	_	,,	1 cwt.	
224	,,	_	**	1 ton.	
1.8	cubic feet	=	">	1 cwt.	
35.84	,,	==	,,	1 ton.	
	-				

 1 circular inch
 =
 1.273 square inch.

 1 cubic foot
 =
 2200 cylindrical inches.

 1 ,,
 =
 3300 spherical ,

 1 ,,
 =
 6600 conical ,



DECIMAL PARTS OF A SUPERFICIAL FOOT OF 144 INCHES REDUCED TO THEIR VALUE IN INCHES.

Inches.	Hundredth Parts.	Inches.	Hundredth Parts.	Inches.	Hundredth Parts.	Inches.	Hundredth Parts.
144	1.00	72	.50	13	-9	. 6	-4
130	-90	57	40	11	.8	4.3	-3
115	-80	48	.30	10	.7	2.9	•2
100	·70	28	-20	9	.6	1.4	-1
87	-60	14	·10	7	.5		1

DECIMAL PARTS OF A CWT. (112 lbs.)

Lbs.	Decimals.	Lbs.	Decimals.	Lbs.	Decimals
84	·75	20	178572	10	*089286
56	·5	19	169643	9	.080357
28	-25	18	·160714	8	071428
27	241071	17	·151785	7	.0625
26	232142	16	142856	6	.053571
25	-223214	15	·133928	5	·0446 4 3
24	214286	14	·125	4	.035714
23	205357	13	·116071	8	-026786
22	196428	12	107143	2	·017857
21	·1875	11	·098214	1	.008928

DECIMAL PARTS OF A POUND (160z.) REDUCED TO THEIR VALUE IN OUNCES.

Ounces.	Hundredth Parts.	Ounces.	Hundredth Parts.	Ounces.	Hundredth Parts.	Ounces.	Hundredth Parts.
1 lb. 16	1.00	3 lbs. 12	•75	⅓ lb. 8	.50	1 lb. 4	-25
151	.97	1113	•72	71	· 4 6	31	-22
15	-94	11	-69	7	· 4 3	8	.19
141	-90	101	·65	61	· 4 0	21/2	·15
14	·87	10	·62	6	·37	2	·12
131	·8 4	91	-59	5 <u>1</u>	*84	11	•09
13	·81	9	·56	- 5	·81	1	.06
121	78	81	·53	41	-28		

DECIMAL EQUIVALENTS TO FRACTIONAL PARTS OF LINEAL MEASURES.

ONE	INCH, THE INTEG	ER OR WHOLE NUM	BER.
Inch. Decimals.	Inch. Decimals.	Inch. Decimals.	Inch. Decimals
7 and 3 = '96875	§ and § = '71875	and 4 = '46875	1 and 3 = ·21875
$\frac{7}{8}$ and $\frac{1}{16} = .9375$	§ and 1 = .6875	8 and 1 = .4375	$\frac{1}{6}$ and $\frac{1}{16} = .1875$
$\frac{1}{6}$ and $\frac{1}{3}$ = 90625	§ and 1 = .65625	and ₁ = ·40625	$\frac{1}{8}$ and $\frac{1}{3}$ = '15625
₹ = ·875	§ = ·625	8 = ∙375	1 = ·125
and 👫 = '84375	$\frac{1}{2}$ and $\frac{2}{3} = .59375$	l and l = 34375	3 = ·09375
and 1 = 8125	land 1 = .2625	l and l = '8125	$\frac{1}{10} = .0625$
and 1 = 78125	½ and ½ = .53125	l and l = 28125	} = '03125
1 = 75	1 = 5	₹ = ·25	
0	NE FOOT OR 12 IN	CHES THE INTEGER	•
Inch. Decimals.	Inch. Decimals.	Inch. Decimals.	Inch. Decimals.
11 = '9166	6 = .2	1 = '0833	§ = '03125
10 = '6338	5 = '4166	₹ = ·07291	₹ = .05083
9 = 75	4 = 3883	3 = ·0625	$\frac{1}{8} = .01041$
8 = '6666	8 = -25	4 = 05208	

DECIMAL APPROXIMATIONS FOR FACILITATING CALCULATIONS.

Lineal feet multi	plied b	y •00019	_	miles	3.	Cubic	inches n	aultiplied	by ·3225 == 11	s. avoir. Copper.
,, yards	"	*00056 8		,,		,,	**	,,	·3037 ==	" Brass
Square inches	"	·007	= 8	squar	e feet.	,,	**	,,	•26 ⇒	" Zinc.
,, yards	"	*0002067	_	,,	acres,	,,	,,	"	·4103 ==	,, Lead.
Circular inches	,,	*00546	_	,,	feet.	,,	**	,,	·2636 ==	,, Tin.
Cylindrical ,,	,,	*0004546	-	cubic	feet.	,,	,,	,,	·4908 ==	,, Mercury.
,, feet	,,	.02909	_	**	yards.	Cylind	rical "	**	2065 =	,, Cast Iron.
Cubic inches	**	.00058	_	.,	feet.	,,	,,	,,	·2168 ==	"Wrought Iron-
,, feet	99	·03704	-		yards.	,,	,,	,,	2223 =	,, Steel.
"	,,	6.232	= 1	mpe	rial galls.	,,	"	,,	·2533 ==	, Copper,
,, inches	,,	*003607	==	-	,,	,,	,,	,,	·2385 ==	,, Brass.
Cylindrical feet	,,	4.895	=		,,	,,	,,	,,	2042 =	" Zinc.
,, inches		.002832	=		,,	,,	"	,,	·3223 =	,, Lead.
Cubic ,,	,,	263	-1	bs. a	voir. of Cast	,,	,,	"	.207 ==	, Tin.
•		•			Iron.	,,	,,	"	·3854 ==	,, Mercury.
j)))	**	.281	=	,,	Wrought ,,		upois l		.009 = cA	
,, ,,	"	283	=	"	Steel.	"	,,	"	00045 = t0	

MELTING POINTS &c. OF VARIOUS METALS.

Welding heat of Iron 13,420° Fahr. 1 foot in length contracts in cooling '137 of an inch.

Power of conducting heat to another body 37.41.

Cast Iro	n melts a	t 2786°	Fahr.	Contracts	in cool	ing '125.	Conducting heat	65.76.
Copper	**	1996	,,	,,	,,	·193.	,,	89.82
Brass	,,	3807	,,	. ,,	,,	·210.	" about	,,
Lead	,,	612	,,	"	,,	319,	"	17.96.
Tìn	,,	442	,,	,,	"	.278.	15	3 0·38.
	Water ex	cpands	in hea	ting from 33	° to 212	2°, about	0434 of its bulk.	

DIAMETERS, AREAS, AND CIRCUMFERENCES OF CIRCLES, From 1 Inch to 24 Feet.

In.	Area.	Circum
1	Feet.	Feet.
3 7 0686 9 4248 3 3 8 295 10 21 6 8 34 906 20 944 18 3 137 886 4 12 566 12 566 3 4 8 726 10 472 6 10 36 673 21 467 18 6 143 189 5 19 685 15 708 3 5 9 168 10 783 7 0 38 484 21 991 13 9 148 489 6 28 274 18 849 3 6 9 621 10 995 7 2 40 338 22 514 14 0 153 988 7 38 484 21 991 3 7 10 084 11 257 7 4 42 236 23 938 14 8 166 18 3 11 10 44 11 781 7 8 46 163 24 085 14 9 170 673 170 673 14 9 170 673 16 163 24 085 14 9 170 673 17 10 48 192 24 609 15 0 176 715 18 19 19 4828 18 19 19 4828 18 19 1	7.676	40.055
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8 50·265	53-938	43.982
9 63-6174 28-274 3 9 11-044 11-781 7 8 46-163 24-085 14 9 170-873 10 78-54 31-416 8 10 11-54 12-042 7 10 48-192 24-609 15 0 176-715 11 95-0334 34-557 8 11 12-048 12.304 8 0 50-265 25-132 15 8 182-654 12 113-097 37-699 4 0 12-566 12-566 8 2 52-381 25-656 15 6 188-69 Ft. In. Feet. 1 1 -9217 54-034 4 2 13-635 13-09 8 6 56-745 26-703 16 0 201-062 1 2 1-069 3-6652 4 3 14-186 13-351 8 8 58-992 27-227 16 8 207-394 1 8 1.2271 3-927 4 4 14-747 13-613 8 10 61-282 27-75 16 6 213-825 1 4 1.396 4-188 4 5 15-32 18-875 9 0 63-619 28-274 16 9 220-353 1 5 1-576 4-45 4 6 15-904 14-187 9 2 65-995 28-798 17 0 226-98 1 6 1-767 4-712 4 7 16-498 14-399 9 4 68-416 29-321 17 8 233-7 1 7 1-968 4-974 4 8 17-104 14-66 9 6 70-882 29-845 17 6 240-528 1 8 2-181 5-236 4 9 17-72 14-922 9 8 73-391 30-368 17 9 247-45 1 9 2-405 5-497 4 10 18-347 15-184 9 10 75-943 30-892 18 0 254-469 1 10 2-639 5-759 4 11 18-985 15-446 10 0 78-54 31-416 18 3 261-587 1 11 2-885 6-021 5 0 19-635 15-708 10 2 81-179 31-939 18 6 268-803 2 0 3-141 6-283 5 1 20-294 15-969 10 4 83-862 32-463 18 9 276-117 2 1 3-408 6-545 5 2 20-965 16-231 10 6 86-59 32-986 19 0 283-529 2 3 3-976 7-068 5 4 22-94 16-755 10 10 92-174 34-034 19 6 298-648 2 4 4-276 7-330 5 5 23-043 17-017 11 0 95-083 34-557 19 9 306-355 2 5 4-586 7-592 5 6 23-758 17-278 11 2 97-934 35-081 20 0 314-16 2 6 4.908 7-854 5 7 24-483 17-540 11 4 100-879 35-604 20 3 322-06 2 8 5-585 8.377 5 9 25-967 18-064 11 8 106-901 36-652 20 9 388-16 2 9 5-939 8-639 5 10 26-725 18-926 11 10 109-977 37-175 21 0 346-36	9.485	44.767
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1 8 2·181 5·236 4 9 17·72 14·922 9 8 73·391 30·368 17·9 247·45 1 9 2·405 5·497 4 10 18·347 15·184 9·10 75·943 30·892 18·0 254·469 1 10 2·639 5·759 4 11 18·985 15·446 10·0 78·54 31·416 18·3 261·587 1 11 2·885 6·021 5·0 19·635 15·708 10·2 81·179 31·939 18·6 268·803 2 0 3·141 6·283 5·1 20·294 15·969 10·4 83·862 32·463 18·9 276·117 2 1 3·408 6·545 5·2 20·965 16·231 10·6 86·59 32·986 19·0 283·529 2 2 3·686 6·806 5·3 21·647 16·493 10·8 89·36 33·51 1	3.7	54 · 192
1 9 2·405 5·497 4 10 18·347 15·184 9·10 75·948 30·892 18·0 254·469 1 10 2·639 5·759 4 11 18·985 15·446 10·0 78·54 31·416 18·3 261·587 1 11 2·885 6·021 5·0 19·685 15·708 10·2 81·179 31·939 18·6 268·803 2 0 3·141 6·283 5·1 20·294 15·969 10·4 83·862 32·463 18·9 276·117 2 1 3·408 6·545 5·2 20·965 16·231 10·6 86·59 32·986 19·0 283·529 2 2 3·686 6·806 5·3 21·647 16·493 10·8 89·36 33·51 19·3 291·039 2 3·3·976 7·068 5·4 22·34 16·755 10·10 92·174 34·034 19·6 298·648	0.528	54:9 78
1 10 2 639 5 759 4 11 18 985 15 446 10 0 78 54 31 416 18 3 261 587 1 11 2 885 6 021 5 0 19 635 15 708 10 2 81 179 31 939 18 6 268 903 2 0 3 141 6 283 5 1 20 294 15 969 10 4 83 862 32 463 18 9 276 117 2 1 3 408 6 545 5 2 20 965 16 231 10 6 86 59 32 986 19 0 283 529 2 2 3 686 6 806 5 3 21.647 16 493 10 8 89 36 33 51 19 3 291 039 2 3 3 976 7 068 5 4 22 34 16 755 10 10 92 174 34 034 19 6 298 648 2 4 4 276 7 830 5 5 23 043 17 017 11 0 95 033 34 557 19 9 306 355 2 5 4 586 7 592 5 6 23 758 17 278 11 2 97 934 35 081	7.45	55.769
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2 1 3·408 6·545 5 2 20·965 16·231 10 6 86·59 32·986 19 0 283·529 2 2 3·686 6·806 5 3 21·647 16·493 10 8 89·36 33·51 19 3 291·039 2 3 3·976 7·068 5 4 22·34 16·755 10 10 92·174 34·034 19 6 298·648 2 4 4·276 7·330 5 5 23·043 17·017 11 0 95·033 34·557 19 9 306·355 2 5 4·586 7·592 5 6 23·758 17·278 11 2 97·934 35·081 20 0 314·16 2 6 4.908 7·854 5 7 24·483 17·540 11 4 100·879 35·604 20 3 322·06 2 7 5·241 8·115 5 8 25·219 17·802 11 6 103·869 36·128 20 6 330·06 2 8 5·585 8.377 5 9 25·967 18·064 11 8 106·901 36·652 20 9 388·16 2 9 5·9	8.803	58.119
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COLONIAL AND FOREIGN POSTAGE—continued.

COUNTRIES, &c.				LE'	rT.	ER	8.	_			COUNTRIES, &c.
"v" denotes that prepayment is voluntary, it being in all other cases compulsory.		ng * oz.	and not	4 oz.	and not	₹ 0Z.	and not		e after		"v" denotes that prepayment is voluntary, it being in all other cases compulsory.
"a" that the Letter, &c. is liable to an additional charge on delivery.		Not exceeding	Above 1 oz.		Above 4 oz.		Above \$ 0z.	exceeding		the First.	compulsory. "a" that the Letter, &c. is liable to an additional charge on delivery. "a" that the Letter, &c. is liable to an additional charge on delivery. "a" that the Letter, &c. is liable to an additional charge on delivery.
		. d.	8.	d.	s .	d.	s.	d.	s.	d.	s. d. s. d. s. d. s. d. s. d. s. a.
Ванамав	1	. 0	1	0	2	0	2	0	2	0	CARIACOU 1 0 1 0 2 0 2 0 2 0
BARBADOES	1	. 0	1	0	2	0	2	0	2	0	CARTHAGENA (S.A.) a 1 0 1 0 2 0 2 0 2 0
BATAVIA. See Java.	1						ı				CAYENNE
Bathurst (Gambia)	0	6	0	6	1	0	1	0	1	0	CEYLON, viâ Marseilles 0 9 1 0 1 9 2 0 2
BAVARIA, via France via Belgium	v 0 v 0		1	0 6	1	6 0	2 1	0	2	0	,, via Southampton 0 6 0 6 1 0 1 0 1 0 CHAGRES
Belgium (if prepaid)	v 0	4	0	4	0	8	0	8	0	8	CHILT
BELGRADE, viâ Belgium . BERBICE	a 0 1	6	0	6 0	1 2	0	1 2	0	1 2	0	CHINA, via Marseilles a 1 3 1 6 2 9 3 0 3 0
BERMUDA, viå Halifax	v 1		,	ŏ	2	0	2	0	2	0	(excptHongKong, which see)
BEYROUT, via Marseilles by	-	·	Γ	•	_	Ī		Ī		-	COLON (New Granada)
French Packet	v 0	6	1	0	1	6	2	0	2	0	
Bolivia	a 2	0	2	0	4	0	4	0	4	0	CONSTANTINOPLE, via Mar- seilles by French Packet. 0 6 1 0 1 6 2 0 2
BONNY	a 0	6	0	6	1	0	1	0	1	0	CORSICA
Borneo, viâ Mars. & India ,, viâ Southn. & India	a 1	3 0	1	8	2 2	9	3 2	0	3 2	0	COSTA RICA, via Panama . a 1 0 1 0 2 0 2 0 2 0
,, by Private Ship .	a o	6	0	6	1	0	1	0	1	0	CUBA, by West India Packet a 1 0 1 0 2 0 2 0 2 0 2 0 0 0 0 0 0 0 0 0
BOTUSCHANY, via Belgium	v 0	7	0	7	1	2	1	2	1	2	New York & Nassau
BOURBON ISLE. See Reunion	١.			^		•		^			,, via France α 0 8 1 4 2 0 2 8 2 8
	a 1		1	0	2	0	2	0	2	0	CURAÇOA
Bremen, viâ Belgium British Columbia. See	v 0	6	0	6	1	0	1	0	1	U	DARDANELLES, by French Packet, via Mars. v 0 6 1 0 1 6 2 0 2 0
Vancouver Island.	A	æ	0	6	١,		1	0	ı	٥	DEMERARA 1 0 1 0 2 0 2 0 2 0
Brunswick, viå Belgium . Bucharest, viå Belgium	1					Ī				٥	DENMARK, via Belgium
and Belgrade	v 0		0	9	1	6	1	6	1	6	
BUENAVENTURA	a 1	0	1	0	2 2	0	2 2	0	2 2	0	ECUADOR a 2 0 2 0 4 0 4 0 4 0 4 0 EGYPT, via Marseilles a 0 9 1 0 1 9 2 0 2
,				·				-			,, via Southampton a 0 6 0 6 1 0 1 0 1 0 (except Alexandria, Cairo,
,,,	v 0 v 0		0	0 6	1	9	2 1	0	1	0	and Suez, which see). FALKLAND ISLANDS . v 0 6 0 6 1 0 1 0 1
CALIFORNIA, via New York ,, by British Packet	1	2,	ı	$2_{\frac{1}{2}}$	2	5	2	5	2	5	FERNANDO PO ,
,, by U. S. Packet)	-			٠,	١,	_	١.	_		_	FRANCE (if prepaid) v 0 4 0 8 1 0 1 4 1
CAMEROONS	a 0		0	6	1	0	1	0	1 2	0	FRANKFORT, viâ Belgium . $\begin{vmatrix} v & 0 & 6 & 0 & 6 & 1 & 0 & 1 & 0 \end{vmatrix}$
CAMPEACHY	a 1	0	1	0	2	0	2	0	l	0	GALATZ, by French Packet v 0 6 1 0 1 6 2 0 2
CANADA, viâ United States) by British Packet viâ Cork by Canadian Packet	v 0 v 0		0	8 6	1	4	1	4	1	4 0	GALLIPOLI, by French Packet, vià Marseilles v 0 6 1 0 1 6 2 0 2
Canary Islands	0		1	0	1	6	2	0	2	0	GAMBIA 0 6 0 6 1 0 1 0 1
	v 0	•	0	11	-	10	1	10	1	10	GIBRALTAR, viá Southamp-
CANEA, viâ Belgium	a 0		1	11		10	ı	10	١	10	GIURGEVO, via Belgium v 0 6 0 6 1 0 1 0 1 -8 1 -8
CAPE COAST CASTLE	v 0		0	6	1	0	1	0	1	0	
	v 1		1	0	2	0	2	0	2	0	GOLD COAST
CAPE DE VERD ISLANDS,	a 0		0	8	1	0	1	4	1	4	via Bordeaux v 0 8 1 4 2 0 2 8 2 via Liverpool a 0 6 0 6 1 0 1 0 1
	l		!		_				1		<u> </u>

COLONIAL AND FOREIGN POSTAGE-continued.

COUNTRIES, &c.			1	LE	TE	cR	3.				COUNTRIES, &c.]	LEI	TI	ERS	3.			
"v" denotes that prepayment is voluntary, it being in all other cases compulsory.	0.102	•	and not	oz.	and not	\$ 0z.	and not	. oz.	after		"v" denotes that prepayment is voluntary, it being in all other cases compulsory.		8 toz.	and not	d oz.	and not	\$ 0z.	and not	OZ.	s after	
"a" that the Letter, &c. is liable to an additional charge on delivery.	Not exceeding			ding	Above \$ oz.	exceeding		exceeding	Every ounce		"a" that the Letter, &c. is liable to an additional charge on delivery.		Not exceeding	Above 4 oz.	gip	ž	ding		exceeding 1	Every ounce	运
	8.	d.	s.	d.	1		8.	d.	8.	d.		8.	d.	s.	d.	s.	d.	ø.	d.	s.	d.
Göttenburg, viå Hull .	v 1	2	1	2	2	4		4	2	4	JAVA, via Marseilles	a 1			6	2	9	3	0	3	0
GREECE by French Packet ,, viàBelgium&Trieste	v 1	0	1	0	2	9	3 2	8	3 2	8	,, via Southampton ,, via Holland	a C	8	0	8	2 1	0 4	2	0 4	1	0 4
GRENADA	1	0	1	0	2	0	2	0	2	0	JERUSALEM, via Marseilles, by French Packet	a (0 6	1	0	1	6	2	0	2	0
Grev Town (St. Juan de Nicaragua)	a 0	6	0	6	1	0	1	0	1	0	.,						-				
GUADALOUPE, via South- ampton	a 1	0	1	0	2	0	2	0	2	0	LABUAN, via Marseilles and India	v]	. 3	1	6	2	9	3	0	3	0
GUATEMALA	a 1	0	1	0	2	0	2	0	2	0	,, via Southampton and India	v 1	١ 0	h	0	2	0	2	0	2	٥
HAMBURG, viå Belgium.	v o	6	0	6	ı	0	1	0	1	0	,, by private ship .	v c			6	ĩ	ŏ	ī	ŏ	î	ŏ
HANOVER, via Belgium	1	6	0	6	1	0	1	0	1	0	LAGOS	(0 6	0	6	1	0	1	0	1	0
HAVANNAH, by West India											LA GUNA DE TERMINOS .	a I	0	1	0	2	0	2	0	2	0
,, by British Packet.	a 1	0	1	0	2	0	2	0	2	0	LARNICA, via Belgium LATAKIA, by French Packet	1		0	11 0	1	10 6	1 2	10 0	1 2	10
via New York and Nassau .	a 1	0	1	0	2	0	2	0	2	0	LAUENBURG, via Belgium .	1		0	7	î	2	1	2	1	9
" via France HAYTI	a 0	8 6	0	4 6	2	0	2	8	2	8	LIBERIA	1	6	0	6	1	0	1	0	1	0
HELIGOLAND, by private		٠		Ů	1	۰	1	٠	•	٠	LIPPE DETMOLD, via Bel-	L.	٠ 4		R	١,	0	1		,	
ship	a 0	6 8	0	6 8	1	0 4	1	0 4	1	0 4	gium	\ \ \	, 0	ľ	0	1	U	1	۳	1	0
HESSE, viâ Belgium		6	0	6	1	0	1	0	1	0	Lubeck, via Belgium	v (6 (0	6	1	0	1	0	1	0
HOLLAND, viå Belgium	v o	8	0	8	1	4	1	4	1	4	Lucca. See Italy.	1		ı							
Homberg-Hesse. SeeHesse					İ						LUXEMBURG (Duchy of),	١.,	6	1		1		2		2	
HONDURAS (British) , (Foreign)	v 1 a 1		1	0	2 2	0	2 2	0	2	0	,, via Belgium	a (6	ō	6	i	0	1	ŏ	1	0
Hong-Kono, via Marseilles ,, via Southampton	v 1	3	1	6	2 2	9	3 2	0	3	0	MADAGASCAR, via Mar-	l							ı		
IBRAILA, by French	-	·		Ī	-	Ĭ	-	٠	_		seilles	a (9	1		1		2	0	2	0
Packet	1	6	1	0	1	6	2	0	2	0	,, via Southampton MADEIRA, by Packet direct	1 .) 6	0	6	1.	0	1	0	1	0
India (Bombay Line), viâ Marseilles	v 0	9	1	0	1	9	2	0	2	0	" do. viâ Lisbon .		4	0	8	1	0	1	4	1	4
,, viâ Southampton	v O	6	0	6	1	Ō	ī	0	ī	0	Majorca	v (6 (1	0	1	6	2	0	2	0
India (Calcutta Line), via Marseilles	ν Λ	9	,	0	1	9	2	0	2	٥	Malta, viâ Marseilles , viâ Southampton	v (6	1	0	1	6	2	0	2	0
,, via Southampton	v 0		ō	6	i		ĩ	Ö	î	ŏ	MARTINIQUE, via South-) 6	0	6	1	0	1	0	1	0
IONIAN ISLANDS, via Bel-								_			ampton	a I	1 0	1	0	2	0	2	0	2	0
,, by private ship .	v 0 4 0	10 6	0	10 6	1			8		8 0	MAURITIUS, viå Marseilles .	v (9	1	6	1	9	2	0	2	0
by direct Mail (Naples and Si-)	v 0	6	,	0	,	6	2	0	2	0	MECKLENBURG - SCHWERIN, and MECKLENBURG-STRE-		-			-	Ĭ	•		Ì	Ĭ
cily only by French Packet)	-	-					_			·	LITZ, via Belgium Mersina, by French Packet				6		6	1 2	0	1 2	0
JAFFA, by French Packet-	₩ 0	6	1	0	1	6	2	0	2	0	Messina. See Italy.	ľ		1		ľ	٦	Ī	•	_	,
JAMAICA	v 1	0	1	0	2	0	2	0	2	0	METELIN or MYTELENE, by	1									
Japan, via Marseilles , via Southampton			1	6 0	2 2	9	3 2	0	3 2	0	French Packet	v (ιo	1	0	1 2	6 0	2	0	2 2	0
			i					- 1			" via France	10	8		4	2	ŏ	2	8	2	8

COLONIAL AND FOREIGN POSTAGE—continued.

COUNTRIES, &c.		-	I	ΕΊ	TE	ER	3.				COUNTRIES, &c.
"v" denotes that prepayment is voluntary, it	.20		pot		not		not		after		"v" denotes that prepay-
being in all other cases	**		and and	형	and	02.	and	0 Z			being in all other cases 🍑 결정 결정 결정 표
compulsory.	ling	- 1	45		ه. ن	3.4	8 3	2	nce		compulsory.
"a" that the Letter, &c.	exceeding	ı	bove 4 oz.		bove 4 oz.	din.	bove 4 oz.	Ę,	onno		
is liable to an additional			9	8	ē	ě	ve i	99	~	4	is liable to an additional charge on delivery.
charge on delivery.	Not		Above	č	ğ	ex	oq	ex	Every	\$	is liable to an additional charge on delivery. By expect A box of the F of
	Z	_	₹		₹		A		1 24	_	1 2 14 14 14
-	s .	d. 1	8.	d.	8.	d.	8.	d.	8.	d.	s. d. s. d. s. d. s. d. s. d.
MODENA, by direct Mail. See Italy.											PENANG, via Marseilles v 1 3 1 6 2 9 3 0 5 0 , via Southampton v 1 0 1 0 2 0 2 0 2 0
,, via France and	١.		,					^		^	PERU
Trieste via Belgium. See	v 0	9	1	6	2	8	3	0	3	U	PHILIPPINE ISLANDS, VIA
Italy	1										Marseilles and India a 1 3 1 6 2 9 3 0 3 0
Moldavia, via France	v 1	2	2	4	8	6	4	8	4	8	and India a 1 0 1 0 2 0 2 0 2 0
Moluccas. See Borneo.									1		PHILIPPOPEL, via Belgium . v 0 10 0 10 1 8 1 8 1 8
MONTE VIDEO, via South-	a 1	0	1	0	2	0	2	0	2	0	POLAND, via Belgium v 0 10 0 10 1 8 1 8 1 8
Ampton	v 1	0	ı	0	2	0	2	0	2	0	PORTO RICO
MOSQUITO TERRITORY	a 1	0	1	0	2	0	2	0	2	0	PORTUGAL, via France a 0 6 1 0 1 6 2 0 2 0 via Southampton a 0 4 0 8 1 0 1 4 1 4
Mostar, via Belgium	1	-	0	9	1	6	ī	6	1	6	yia Southampton a 0 4 0 8 1 0 1 4 1 4 by private ship a 0 4 0 4 0 8 0 8 0 8
mostany via zongram							-		ł		PRINCE EDWARD ISLAND . V 0 6 0 6 1 0 1 0 1 0
NAPLES. See Italy.											PRUSSIA, via Belgium v 0 6 0 6 1 0 1 0 1 0
NASSAU. See Frankfort.	İ										Rhenish Prussia, via France v 0 6 1 0 1 6 2 0 2 0
NATAL	v 1	0	1	0	2	0	2	0	2	0	Other Parts, via
	a 1	0	1	0	2	0	3	0	2	0	France v 0 8 1 4 2 0 2 8 2 8
Nevis	v 1	0	1	0	2	0	2	0	2	0	
NEW BRUNSWICK	v 0	6	0	6	1	0	1	0	1	0	QUEENSLAND, via Suez and Southampton 0 6 0 6 1 0 1 0 1 0
NEWFOUNDLAND	v 0	6	0	6	1	0	1	0	1	0	,, via Suez and Mar-
NEW GRANADA	a 1	0	1	0	2	0	2	0	2	0	Seilles 0 9 1 0 1 9 2 0 2 0
NEW SOUTH WALES, via									١.	•	QUITO a 2 0 2 0 4 0 4 0 4 0
Southampton and Suez., via Marseilles and			0	6	1	0	1	0	1	0	REUNION, via Marseilles $a \ 0 \ 9 \ 1 \ 0 \ 1 \ 9 \ 2 \ 0 \ 2 \ 0 \ 0 \ 1 \ 0 $
Suez	0	9	1	0	1	9	2	0	2	0	RHODES, by French Packet,
NEW ZEALAND, via South- ampton and Suez	0	6	0	6	1	0	1	0	ı	0	via Marseilles v 0 6 1 0 1 6 2 0 2 0
,, via Marseilles and	1			-		-	l	-	2	0	RUSSIA, via Belgium v 0 10 0 10 1 8 1 8 1 8
Suez	0	9	1	0	1	9	2	0	ľ	U	RUSTCHUK, via Belgium . a 0 10 0 10 1 8 1 8 1 8
NICARAGUA. See Grey Town.	., ,	2	,	2	2	4			2	4	ST. CROIX
NORWAY, via Belgium			1 0	6	1	0	2	4	1	0	St. Eustatius
NOVA BOOTIA WIFECE	١, ١	۲		٦	-	v	١,	U	1	,	St. Helena
OLDENBURG, via Belgium	v o	6	0	6	1	0	ı	0	ı	0	St. Jago de Cuba, via
, ,	ı		0	6	1	0	i	0	li	0	Southampton $ a \ 1 \ 0 \ 1 \ 0 \ 2 \ 0 \ 2 \ 0 \ 2 \ 0$
OREGON, via New York, by	آ "		Ī		ľ	٠	٦	٠	Ī	•	,, via France
British Packet, or by		61		٠.	٦					E	
United States Packet	1	-		$2\frac{1}{2}$	2	5	2	5	1	5	
PANAMA	a 1	0	1	0	2	0	2	0	2	0	St. Lucia
PAPAL STATES, via France, or by French Packet, via							İ				
Marseilles	v 0 1	11	1	10	2	9	3	8	3	8	St. MIGUEL See Guate- St. Salvador mala.
PARAGUAY	a 1	0	1	0	2	0	2	0	2	0	St. Sophia, vià Belgium . v 0 10 0 10 1 8 1 8 1 8
PARMA and PLACENTIA, by	1										St. Thomas
direct Mail. See Italy.	1								1		St. Vincent (West Indies) v 1 0 1 0 2 0 2 0 2 0
	v 0	9	1	6	2	3	3	0	3	0	,, (Cape de Verd) . a 0 4 0 8 1 0 1 4 1 4
	<u>'</u>		<u> </u>				1			_	

COLONIAL AND FOREIGN POSTAGE-continued.

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COUNTRIES, &c.		LE.	TTER	ts.			COUNTRIES			LE	тт	ER	8.			
,		بدا	سا	ددا	T		COUNTRIES, &c.				-	_	-			_
"v" denotes that prepay- ment is voluntary, it	OZ.	not	00	lot lot	100	ğ	"v" denotes that prepay- ment is voluntary, it	ž.		not	not		not		1 10	
being in all other cases	-10	and oz.	and	and			being in all other cases	-		and oz.	7	\$ 0Z	٦		after	
compulsory.	ing	1	2 44	a -	و ا ا	8	compulsory.	2	P	a.	.∣ ≅	**	g	1 oz.		
"a" that the Letter, &c.	exceeding	ove 1 oz.	oz.	OZ.	١)	First.		exceeding		oz.	S S	188	20	Bu	oance	š.
is liable to an additional) Š	# g		44.2	1	훒	"a" that the Letter, &c. is liable to an additional	§		bove 4 oz.	-	, ;	ate	Œ,		First
charge on delivery.		Above	XC XC	ove V		h.	charge on delivery.	9		ove Kce	2	3	1 8	ē	Þ	9
	Not	Ab	Above 4 c	Above \$ oz.	, ¢	the I		Not		Above	Above	æ	Above	9	Every	₽
	s. d.	s. d.	s. d	Ì		d.				s. d	Ť	d.	i		Ì	
SALONICA, by French Packet		İ	1		1		TASMANIA, viâSouthampton	•	۳.	•. и		u.	s.	d.	8.	d.
viå Marseilles	į	1 0	1 6	1	0 2	-	and Suez	0	6	0 6	1	0	1	0	1	0
SANDWICHISLANDS, viâ New	, , ,	1 0	1 0	'l- '	12	U	Suez	0	9	1 0	1	9	2	0	2	0
York by British Packet				1			TCHESME, viâ Belgium	v 0	11	0 11	1	10	1	10	1	10
or by United States Pkt.	a 1 2½	1 21	2 5	2 :	5 2	5	TENEDOS, viâ Belgium	v 0	11	0 11	1	10	1	10	1	10
SANTA MARTHA	a 1 0	1 0	2 0	2 (0 2	0	TENERIFFE	v 0	6	1 0	1	6	2	0	2	0
SARDINIA. See Italy.							Товасо	v 1	0	1 0	2	0	2	0	2	0
SAXE-ALTENBURG							TORTOLA	v 1	0	1 0	2	0	2	0	2	0
SAXE-COBURG-GOTHA See	Frankf	ort.	1		1		TREBIZOND, by French Pkt.	v o	6	1 0	1	6	2	0	2	0
SAKE-MEININGEN							TRINIDAD	v 1	0	1 0	2	0	2	0	2	0
Saxony, via Belgium	v 0 6	0 6	1 0	1 (1	0	TRIPOLI, (Syria) by French		- 1							-
SCHAUMBURG-LIPPE, viâ Belgium	v 0 6	0 6	1 0	1 (1	0	Packet, via Marseilles Tultcha, by FrenchPacket	v 0 v 0	- 1	10	1	6	2 2	0	2	0
SCHWARTZBURG-RUDOLSTA	DT)				1		Tunis, via Marseilles, by						-		_	
SCHWARTZBURG-SONDERHA	USEN			l			French Packet	0	6	1 0	1	6	2	0	2	0
See Frankfort.)						Turkey, via France	a 1	3 3	2 6	8	9	5	0	5	0
SCUTARI (Asia) viâ Belgium	va0 11	0 11	1 10	1 10	1	10	,, by French Packet, via Marseilles	a 0	6	١ ٥	1	6	2	0	2	اه
SENEGAL, by French Packet				1					0		2	0	2		2	۸
viå Bordeaux		1 4	$\begin{array}{ccc} 2 & 0 \\ 1 & 0 \end{array}$	2 8		8	TUSCANY. See Italy.		1		-		-		•	٦
		0 11		1		0						- 1		- 1		- 1
Seres, viå Belgium Servia (Belgrade excepted)	1		1 10 2 0	1_10 2 8	1	10	UNITED STATES, by Brt.		- 1		1			-		1
, , ,	408	1 4	2 0	2 8	2	8	Packet via Cork by United States	v 1	0	1 0	2	0	2	0	2	0
SEVENELLES. See Mauritius SICILY. See Italy.							Packet		1		1	- 1		- 1		
					1_		(except California and Oregon, which see).					- 1		-		1
		- 1	1 0	1 0	1-	0		αO	6	6 (1	0	1	0	1	اه
Singapore, via Marseilles.			2 9	3 0 2 0	3 2	0	URUGUAY	a 1	0 1	0	2	0	2	- 1	2	٥
SMYRNA, by French Packet			- 1												_	
l		. 1	1 6	2 0	2	0	VANCOUVER'S ISLAND viâ New York by Brit. Pk.	. 1		0.1						ا ـ
Spain, viâ France	1	- 1	1 6	2 0	2	0			$\frac{2\frac{1}{2}}{6}$		2				2 1	8
Suez, viâ Marseilles , viâ Southampton			1 9	2 0	2	0			6 1	•	1	- 1		- 1		0
SUMATRA. See Borneo.							VENETIA, viâ Belgium	v 0	6 0	6	1	0	1	- (1	٥
l_	a 1 0	1 0	2 0	2 0	2	0	VENEZUELA	0	6 0	6	1	0	1		1	٥١
SWEDEN, viâ Belgium	v1 0		2 0	2 0	2	0	VICTORIA (Australia), viâ									
,, (Gottenburg) viâ Hull.			2 4	2 4	2	4	Southampton and Suez.	0	6 0	6	1	0	1	0	1	0
Switzerland, viâ France . ,, viâ Belgium	v 0 6 v 0 8		1 6 1 4	$\begin{array}{ccc} 2 & 0 \\ 1 & 4 \end{array}$	2	0 4	Suez	0	9 1	. 0	1	9	2	٥	2	۰
Syria, viâ Marseilles by French Packet	a 0 6	1 0	1 6	2 0	2									1		
		. "	- 0	2 0	-	0	WALLACHIA, viâ France.	v 1	2 2	4	3	6	4	8	4	8
TAHITI, viâ Panama	u 2 0 2	2 0	4 0	4 0	4		WASHINGTON TERRITORY.							-		. [
by private Ship .	a 0 6		1 0	1 0	1	0	See California.									1
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COLONIAL AND FOREIGN POSTAGE-continued.

COUNTRIES, &c.	1	LETTERS.	COUNTRIES, &c.	LETTERS.
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FOREIGN MAILS.

MADE UP IN LONDON.

France	Twice a day.
Belgium, Holland, Prussia, Austria, Portugal, and Spain	Daily.
Hamburgh, Sweden, and Norway	Daily.
Channel Islands	Monday, Wednesday, and Friday.
Madeira	On the 23d of each month.
Portugal and Madeira, via Southampton	On the 9th of each month.
Gibraltar	On the 4th, 12th, 20th, and 27th of each month.
Greece, and Ionian Islands	Daily.
Brazil, Buenos Ayres	On the 9th of each month.
British North America	Wednesday, Thursday, and Saturday.
United States	
Bermuda	Every alternate Saturday.
West Indies, Chagres, New Granada, Panama, and Venezuela	On the 2d and 17th of each month.
Mexico	On the 2d and 15th of each month.
Cape of Good Hope and Port Natal	On the 5th of each month.
Syria	On the 8th, 18th, and 28th of each month.
Bahamas	Every 4th Saturday.
Havannah	On the 2d of each month, and every 4th Saturday.
Honduras	On the 17th of each month.
Australia and Mauritius, via Southampton	On the 20th of each month.
Ditto ditto Marseilles	On the 26th of each month.
Malta, viå Marseilles	On the 3d, 10th, 18th, and 26th of each month.
Ditto Southampton	On the 4th, 12th, 20th, and 27th of each month.
India (Bombay Line), via Marseilles	On the 3d and 18th of each month.
Ditto ditto Southampton	On the 12th and 27th of each month.
India (Calcutta Line), China and Japan, via Marseilles	On the 10th and 26th of each month.
Ditto ditto ditto Southampton	On the 4th and 20th of each month.

BILLS AND PROMISSORY NOTES.

PAYABLE IN ANY OTHER WAY THAN TO BEARER ON DEMAND.

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Bills of Exchange and Promissory Notes drawn out of the United Kingdom, but payable or negociated within it, the same duty as Inland Bills; except above £500, for every £100 or part of £100, 1s.; denoted by adhesive Stamps.

INTEREST TABLE FROM £1 TO £500, AT FIVE PER CENT.

FROM ONE DAY TO THIRTY.

	1 6	lay.	2 d	ays.	3 d	ays.	4 0	lays.	5 0	lays	60	lays.	76	lays.	8 d	lays.	9	days.	10 d	lays.	20) da	ays.	30) da	ıys.
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2	0	0	0	0	0	0	0	٥.	0	01	0	0 <u>‡</u>	0	0}	0	0 <u>3</u>	0	01	0	01	0	0	11	0	0	1
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4	0	0	0	01	0	0 1	0	01	0	01	0	03	0	03	0	1	0	1	0	11	0	0	$2\frac{1}{2}$	0	0	3
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20	0	0}	0	11	0	13	0	$2\frac{1}{2}$	0	31	0	33	0	41	0	51	0	53	0	$6\frac{1}{2}$	0	1	1	0	1	7
30	0	03	0	12	0	$2\frac{3}{4}$	0	32	0	43	0	57	0	$6\frac{1}{2}$	0	$7\frac{1}{2}$	0	83	0	93	0	1	71	0	2	5
40	0	11	0	21	0	33	0	51	0	$6\frac{1}{2}$	0	72	0	9	0	101	ļ٥	112	1	1	0	2	$2\frac{1}{4}$	0	3	8
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FOREIGN MINISTERS AND CONSULS IN LONDON.

America Envoy Ex. and Minister Plen	. Charles Francis Adams, Esq	5, Upper Portland-place.
Consul	. F. H. Morse, Esq	67. Gracechurch-street
Austria Chargé d'Affaires	Count Rudolph Apponyi	Chandes House Cowondish as
Consul Consul	Down Bull - 121	chandos House, Cavendish-sq.
Consul General	. Baron Rothschild	. 29, St. Swithin's-lane.
Bavaria Envoy Ex. and Minister Plen		
Consul General	. Adolphus Brandt, Esq	3. Great St. Helens.
Baden Consul	John Simson Fee	1 Riches court Lime atmost
Belgium Envoy Ex. and Minister Plen		
	. Octave Delepierre, Esq	
Bolivia Consul	. Mr. J. M. Gumacio	. 141, New Bond-street.
Brazil Envoy Ex. and Minister Plen		
	. Ling Augusta da Costa	
Chili Consul		
Costa Rica Consul	. Geo. W. Ewin, Esq	4, Adams-court, Old Broad-st
Denmark Envoy Ex. and Minister Plen		
	. Fletcher Wilson, Esq	
France Amb. Ex. and Minister Plen		
Consul	. M. Henri Boisselier	. 36, King William-street.
Greece Envoy Ex. and Minister Pler	. Mons. Tricoupi	. 44. Bryanstone-square.
	. Alexander C. Ionides, Esq	
Hanover Envoy Ex. and Minister Plen		
Consul General	. August Wehner	31, Lombard-street.
Hamburgh, Lu-) Resident Minister	. Dr. Alfred Rucker	. 53. Eaton-square.
beck & Bremen Consul		
Haytian Republic Resident Minister		
Consul	. John Conrand Stiffell	1, Chapel-place, Poultry.
Hesse Consul General	. Bernard Hebeler, Esq	106, Fenchurch-street.
La Plata Consul General	Gerard Ralston, Esq.	21. Tokenhouse-verd
Mecklenberg Consul General		
Mexico Envoy Ex. and Minister Plen		
Consul	. J. Levi Hart, Esq	. 7, Broad-street-buildings.
Netherlands Minister Ex. and Plen	Baron Bentinck	20. Lowndes-square.
	. John Wm. May, Esq	
New Grenada Consul General		
Nicaragua Consul General	. Charles White, Esq	. Barge-yard.
Oldenburgh Consul General	. Chevalier Colquhoun	. 3, Stratford-place.
Peru Resident Minister		
	. Henry Kendall, Esq	
Portugal Envoy Ex. and Minister Plen		
Consul General	. Le Command. Van Zeller	. 15, St. Mary Axe.
Prussia Envoy Ex. and Minister Pler		
	. Bernard Hebeler, Esq	
Russia Envoy Ex. and Minister Plen		
	, F. D. Grote, Esq	
Sardinia Envoy Ex. and Minister Plen	. Marquis d'Azeglio	23, Park-lane.
	. J. Benjamin Heath, Esq	
Saxe Weimar Consul		
Saxe Weimar Consul	. Samson Cammann, Esq	. 13, Austin Friars.
Saxony Resident Minister	.Count de Vitzthum	. 3, Hobart-place, Eaton-square.
Consul General	. James Colquhoun, Esq	. 3, Hare-court, Temple.
Schwarzburg Consul		
Spain Envoy Ex. and Minister Plen		
Consul General	. Don John Gavaron	. 1, Cushion-ct. Old Broad-st.
Sweden and Nor-; Envoy Ex. and Minister Plen	. Count de Platen	49, Grosvenor-place.
way Consul General	. Charles Tottie, Esq	. 2. Alderman's-walk.
Switzerland Agent and Consul General	John Rann Esc	21 Old Broad-street
Switzerland Agent and Consul General	M. Musuma Dan	D. D. D. D. D. D. D. D. D. D. D. D. D. D
Turkey Envoy Ex. and Minister Plen	. m. musurus bey	. 1, Bryanstone-square.
Consul General	. M. Antoine Psichare	. 8. New Broad-street, City.
Uruguay Consul	. E. B. Neill, Esq	. 9, New Palace-vard.
Venezuela Envoy Ex. and Minister Plei	Senor Rodriquez	. 1. Clarges street Piggadill-
venezuela Mivoy ma. and Millister I ici	F H Hemming Foo	95 Moometa street
Consui	F. H. Hemming, Esq	20, moorgate-street.
Wurtemburg Consul General	. Bernard Hebeler, Esq	. 105, Fenchurch-street,



LONDON BANKERS.

Agra and United Service Bank, 27, Cannon-street, City. Agra and United Service Bank, 21, Cannon-street, City.
Alliance Bank of London and Liverpool, 5, Lothbury.
Bank of Australasia, 4, Threadneedle-street.
Bank of British Columbia, 80, Lombard-street.
Bank of British North America, 7, 8t. Helen's-place.
Bank of Egypt, 26, Old Broad-street, City.
BANK OF ENGLAND, Threadneedle-st.; 1, Old Burlingtonstreet Bank of Hindustan, China, and Japan, 16, Cornhill. Bank of London, 52, Threadneedle-st.; 450, West Strand. Bank of London and Middlesex, 20, Finch-lane; 10, Upper St. Martin's-lane; 34, Mount-street, S. Bank of N. S. Wales (London Agency), 37, Cannon-st. Bank of N. S. Wales (London Agency), 37, Cannon-st. City.
Bank of New Zealand, 50, Old Broad-street.
Bank of Queensland, 26, Old Broad-street.
Bank of Queensland (Limited), 26, Lombard-street.
Bank of Victoria, 3, Threadneedle-street.
Barclay, Bevan, Tritton, and Co. 54, Lombard-street.
Barclay, Bevan, Tritton, and Co. 54, Lombard-street.
Biddulph, Cocks, and Co. 43, Charing-cross.
Biggerstaff, W. and J. 63, West Smithfield; 6, Bank-buildings, Metropolitan Cattle-market, Islington.
Bosanquet, Franks, Whatman, and Co. 73, Lombard-st.
Brown, Janson, and Co. 32, Abchurch-lane.
Brown, John, and Co. 25, Abchurch-lane.
Call, Sir W. P. Bart., Marten and Co. 25, Old Bond-st.
Central Bank of Western India (London Branch), 22, Old Central Bank of Western India (London Branch), 22, Old Broad-street Challis and Son, 16, West Smithfield; 12, Bank-buildgs.
Metropolitan Cattle-market, Islington.
Bank of Hindustan, Chartered Bank of India, Australia, and China, 10, Threadneedle-street.
Chartered Mercantile Bank of India, London, and China, 52, Threadneedle-street. Child and Co. 1, Fleet-street, Temple-bar. City Bank, Threadneedle-street, corner of Finch-lane. Colonial Bank, 13, Bishopsgate-street Within. Commercial Bank of India (London Agency), 64, Moorgate-street gate-street.
Commercial Banking Company of Sydney (London Agency), 33, Cornhill.
Courts and Co. 59, Strand.
Cunliffe, Roger, Sons, and Co. 24, Bucklersbury.
Cunliffes and Co. 24, Lombard-street.
Curries and Co. 29, Cornhill.
Dimsdale, Drewett, Fowler, and Barnard, 50, Cornhill.
Drummond and Co. 49, Charing-cross.
English, Scottish, and Australian Chartered Bank, 73,
Cornhill Cornhill. Feitham, John, and Co. 2, Ball-alley, 49, Lombard-st. Fuller, Banbury, Nix, and Mathieson, 77, Lombard-st. General Bank of Switzerland (London Agency), 2, Royal Exchange-buildings, City.
Glyn, Mills, and Co. 67, Lombard-street.
Goslings and Sharp, 19, Fleet-street.
Grindlay and Co. 55, Parliament-street. Hallett, Ommanney, and Co. 14, Great George-street, Westminster.

westminster.

Hanburys and Lloyds, 60, Lombard-street.

Hankey and Co. 7, Fenchurch-street.

Herries, Farquhar, and Co. 16, St. James'-street.

Hervisood, Kennards, and Co. 4, Lombard street.

Hill and Sons, 17, West Smithfield; 2, Bank-buildings,

Metropolitan Cattle-market, Islington. metropontan Cathe-market, 1811ngton.
Hoare, Messrs. 37, Fleet-street
Hopkinson, Chas. and Co. 3, Regent-street, Waterloo-pl.
Imperial Bank, 6, Lothbury.
Ionian Bank, 6, Great Winchester-street.

Johnston, H. and J. and Co. 28, Cannon-street, City.

Jones Loyd, and Co. 43, Lothbury. Lacy and Son, 60, West Smithfield; 11, Bank-buildgs. Metropolitan Cattle-market, Islington.

Lombard Bank of London and Yorkshire, 36, Old Broad-street.

London and Brazilian Bank, 2, Old Broad-street. London, Buenos Ayres, and River Plate Bank, 40, Moorgate-street

ondon and Colonial Bank, 83, Lombard-street. London Chartered Bank of Australia, 17, Cannon-street,

city.

London and County Banking Company, 21, Lombardstreet; Albert Gate, Knightsbridge; 6, Berkeleyplace, Edgware-road; 441, Oxford-street; 201, Highstreet, Borough; 21, Hanover-square; High-street,
Kensington; 19, High-street, Islington; 187, Shoreditch; Westbourne-grove, Bayswater; Henriettatreet Covent garden; Barodyna Strafford Escarditch; Westbourne-greve, Bayswater; Henriconstreet, Covent-garden; Broadway, Stratford, Essex. London Joint Stock Bank, 5, Princes-street, Bank; 69,

Pall Mall.

London and South African Bank, 10, King Williamstreet, City

street, City
London and Westminster Bank, 41, Lothbury; 1, St.
James'-square; 214, High Holborn: 3, Wellingtonstreet, Borough; 37, High-street, Whitechapel; 4,
Stratford-place, Oxford-street; 217, Strand.
Martin and Co. 68, Lombard-street.
Masterman, Peters, and Co. 35, Nicholas-lane.
Metropolitan and Provincial Bank, 75, Cornhill.
Notional Bank, 13, Old Broad-street; 19, Gloucester.

National Bank, 13, Old Broad-street; 19, Gloucester-gardens, Bayswater.

National Provincial Bank of England, 112, Bishopsgatestreet.

Oldings, Osborne, and Co. 29, Clements-lane. Oriental Bank Corporation, Threadneedle-street. Ottoman Bank, 4, Bank-buildings, City. Praed, Fane, and Co. 189, Fleet-street. Prescott, Grote, Cave, and Co. 62, Threadneedle-street. Price. Marryat, and Co. 3, King William-street, City. Provincial Bank of Ireland, 42, Old Broad-street. Provincial Bank of Ireland, 42. Old Broad-street. Puget, Bainbridge, and Co. 12, St. Paul's-churchyard. Ransom, Bouverie, and Co. 1, Pall Mall East. Richardson and Co. 23, Cornhill; 13, Pall Mall. Robarts, Lubbock, and Co. 15, Lombard-street. Samuel, Montague, and Co. 21, Cornhill. Scott, Sir Samuel, Bt. and Co. 1, Cavendish-square. Seale, Low, and Co. 7, Leicester-square. Shank, John, 4, Metropolitan Cattle-market, Islington. Smith, Elder, and Co. 45, Pall Mall: 65, Cornhill. Smith, Payne, and Smiths, 1, Lombard-street. South Australian Banking Company, 54, Old Broad-street.

Spielmann, Adam, and Co. 79. Lombard-street. Spooner, Attwoods, and Co. 27, Gracechurch-street. Standard Bank of British South Africa, 27, Moorgate-

Stevenson, Salt. and Sons, 20, Lombard-street.
Stride, J. and W. S. 41, West Smithfield; 8, Metropolitan Cattle-market, Islington.

Twining, Richard, and Co. 215, Strand. Union Bank of Australia, 38, Old Broad-street. Union Bank of England and France, 83, King Williamstreet, City.

Union Bank of Ireland, 52, Moorgate-street.
Union Bank of London, 2, Princes-street, Bank; 14,
Argyll-place; 4, Pall Mall East; 13, Fleet-street. West End Joint Stock Bank, 11, Haymarket. Williams, Deacon, Labouchere, and Co. 20, Birchin-la. Willis, Perceval, and Co. 76, Lombard-street.



